

AN EVALUATION OF POSTNATAL CARE RENDERED TO HIV POSITIVE WOMEN  
AND THEIR INFANTS

by

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# *Dedication*

To my dear and loving soul mate (Wendy), family, friends, and  
colleagues

Student number: 43428967

## **DECLARATION**

I declare that **AN EVALUATION OF POSTNATAL CARE RENDERED TO HIV POSITIVE WOMEN AND THEIR INFANTS** is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete reference and that this work has not been submitted before for any other degree at any other institution.

Full names: Bongani Robert Dlamini

Date: 10 June 2012

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**ABSTRACT**

The purpose of this study was to evaluate care rendered to HIV positive women and their infants during the first six weeks of postpartum. Quantitative, descriptive, cross sectional and analytic study was conducted to investigate postnatal care services provided to HIV positive mothers. Data collection was done using structured questionnaires. 372 respondents participated in the study. Descriptive data analysis was used; Epi info version 3.5.2 software was used. The study highlighted that the quality of PNC was compromised, in all levels including the critical immediate postnatal care, 3-14 days and 6 weeks postnatal care services. All health facilities that were involved in the study had the basic resources to render quality postnatal care. Negative attitudes of staff and long waiting time (16.7%), were the most deterrents to postnatal care.

**Key concepts:**

Postnatal care, Prevention of Mother to Child Transmission, Mother to Child to Transmission, Antiretroviral, HIV positive, Prophylaxis, midwives

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## **ANNEXURES**

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Annexure E Data collection tool (questionnaire)

Annexure F Signed certificate by professional editor

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## LIST OF ABBREVIATIONS/ACRONYMS

AFASS	Acceptable, Feasible, Affordable, Sustainable and Safe
AHWO	Africa Health Workforce Observatory
AIDS	Acquired Immune Deficiency Syndrome
ANECCA	African Network for the Care of Children Affected by HIV/AIDS
APGAR	Appearance, Pulse, Grimace, Activity and Respiration
ART	Antiretroviral Therapy
ARV	Antiretroviral
BP	Blood Pressure
CSO	Central Statistics Office
DBS	Dried Blood Spot
DoH	Department of Health
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
EHCP	Essential Healthcare Package
EID	Early Infant Diagnosis
EmOC	Emergency Obstetric Care
HAART	Highly Active Antiretroviral Therapy
HEARD	Health Economics and HIV/AIDS Response Division
HIV	Human Immunodeficiency Virus
ICM	International Confederation of Midwives
IMR	Infant Mortality Rate
IPT	Isoniazid Prophylactic Therapy
KoS	Kingdom of Swaziland
LGE	Linear Gingival Erythema
MCH	Maternal Child Health
MDG	Millennium Development Goal

MEPD	Ministry of Economic Planning and Development
MMR	Maternal Mortality Rate
MNCH	Maternal and Newborn Child Health
MoH	Ministry of Health
MPS	Making Pregnancy Safer
MTCT	Mother to Child Transmission
NERCHA	National Emergency Council on HIV and AIDS
NVP	Nevirapine
OIs	Opportunistic Infections
PCR	Polymerase Chain Reaction
PHU	Public Health Unit
PMTCT	Prevention of Mother to Child Transmission
PNC	Postnatal care
RCM	Royal College of Midwives
RSA	Republic of South Africa
SAM	Service Availability Mapping
SRHU	Sexual Reproductive Health Unit
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNISA	University of South Africa
WHO	World Health Organization

## **CHAPTER 1**

### **ORIENTATION TO THE STUDY**

#### **1.1 INTRODUCTION**

Post-natal care (PNC) services for HIV-positive clients have received widespread global and national support in Swaziland; yet PNC coverage in developing countries continues to be less recognized despite high morbidity and mortality which continues to threaten women and babies during this period. On the contrary, in developed countries postnatal care services are a norm (WHO 2010b:3). In Swaziland, PNC coverage is extremely low with the majority (75%) of mother–baby pairs receiving no quality PNC services (Kingdom of Swaziland (KoS), Central Statistics Office (CSO) 2008:123). One of the challenges in the provision of PNC is the quality of services rendered by midwives as the majority 60% of maternal and neonatal deaths occur within the first 48 hours of birth; yet, 74% mothers give birth in healthcare facilities (KoS,CSO 2008:120).

Early discharge home (within 24 hours after delivery) is another contributory factor to poor quality of PNC services in Swaziland, particularly to women who are inaccessible to emergency obstetric care (Warren, Shongwe, Waligo, Mazia, Mahdi & Narayana 2008:8). Recognising the need to improve the care and follow-up of mothers and infants in the post-natal period, the KoS Ministry of Health (MoH) (KoS, MoH 2010a) developed guidelines aimed at strengthening the quality of PNC rendered to HIV-positive mother–baby pairs. The findings from the study will provide information related to quality PNC offered to HIV-positive mothers and infants in public healthcare facilities in Swaziland.

#### **1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM**

##### **1.2.1 Source of the problem**

Swaziland is one of the countries greatly affected by the deadly HI virus. Data from the HIV sero-surveillance report reveals that 41.1% of antenatal attendees are HIV-positive (KoS, MoH 2010a:15). This situation puts 13 563 infants at risk of acquiring

HIV either vertically or post-natally (KoS, MoH 2010a:10). In an effort to curb mother to child transmission (MTCT) of HIV, the Swaziland Ministry of Health issued guidelines for health practitioners and midwives to standardise practice and to offer relevant HIV care, treatment and support to mothers and babies during pregnancy, labour and peuperium (KoS, MoH 2010a:10). The long-term goal of this management plan is to increase the uptake of post-natal care (PNC) services to HIV-positive mothers and virtually eliminate paediatric HIV by 2015 (KoS, Ministry of Economic Planning and Development (MEPD) 2010:38).

Despite the cited benefits of PNC, gaps in effective delivery of PNC services to HIV-positive mothers and their HIV-exposed babies were observed at the selected healthcare facilities. This observation was further confirmed by Shongwe (2009:83) who noted that there was a total lack of PNC in some underdeveloped countries. Reasons cited by Ziyane and Thwala (2010:15) were personal, socio-cultural and psychological problems and the quality of post-natal services provided to clients.

## **1.2.2 Background to the research problem**

### **1.2.2.1 The need for post-natal care**

In Swaziland, MMR stands at 589 per 100 000 live births (KoS, CSO 2008:242); 60% of these deaths occur during the first 48 hours of peuperium (Ziyane & Thwala 2010:16). Major causes of maternal deaths are postpartum haemorrhage, puerperal sepsis, eclampsia, HIV and AIDS (WHO 2006:18). Further, Morestin, Bicaba, Serme and Fournier (2009:1) report that globally about 529 000 women die each year as a consequence of childbirth. The majority (99%) of deaths occur in sub-Saharan Africa where the quality of maternal care is compromised (WHO 2010b:1). Offering quality PNC services can prevent these obstetric complications and promote maternal and child health. Antiretroviral therapy can prolong maternal health and prevent MTCT of HIV among HIV-positive women (Elizabeth Glaser Paediatric AIDS Foundation (EGPAF) 2010:18).

During early puerperium, an HIV-positive woman is more vulnerable to puerperal infection that may challenge the weakened immunity. Bleeding can cause anaemia, which may deplete the mother's haemoglobin and increase her risk of progressing to AIDS (WHO, Department of Making Pregnancy Safer (MPS) 2010b:11). Chances of MTCT of HIV are also increased when a woman has a low CD4 cell count (<350 cells/ml or less) (Republic of South Africa (RSA), Department of health (DoH) 2010:23). Other factors, which increase MTCT of the virus, include high maternal viral load, breast conditions, and poor maternal nutrition (KoS, MoH 2010a:10). It is therefore imperative to monitor women and babies during puerperium in order to prevent mother-to-child-transmission of HIV and further promote maternal and child health.

The model for PNC that is adopted by the Ministry of Health in Swaziland is guided by the WHO PNC model, in terms of which women and their babies are assessed within the first hour post-natally, during the first six hours, daily until discharge, within the first two weeks and at six weeks. For women who have given birth at home, PNC services should be offered within the first 48 hours (KoS, MoH 2010a:39). Post-natal care rendered to women includes an assessment of vital signs, physical examination, an inspection and palpation of the reproductive system, counselling, treatment and support on issues related to HIV and AIDS, including safe infant feeding practices (KoS, MoH 2010a:38).

Physical examination is conducted to the newly born baby to exclude congenital abnormalities, render efficient care during the critical adaptation period, and initiate antiretroviral (ARV) prophylaxis and offer safe feeding practices (KoS, MoH 2010a:36). Warren *et al.* (2008:14) observed that the main role of a midwife is to offer quality PNC to mothers and young children at all times.

### **1.2.2.2 Post-natal care in Swaziland**

The seriousness of HIV infection is noted among pregnant women in Swaziland, which currently stands at 41.1% (KoS, MoH 2010a:15). Paediatric HIV infection is also a reality as 90% of young children acquire HIV infection through MTCT of the

virus (KoS, MoH 2010a:4). Consequently, maternal mortality is high (589 per 100 000 live births) and infant mortality stands at 85 per 1 000 live births (KoS, MoH 2011a:6). About 13 563 HIV-exposed babies are delivered every year with survival chances of 50% for the first two years of life (KoS, MoH 2010a:10). Midwives who attend to 57% deliveries have a responsibility of providing effective PNC interventions (KoS, CSO 2008:122).

The Swaziland KoS, MEPD (2010:37) noted that, in order for Swaziland to meet millennium development goals (MDG) 4 and 5 (to reduce maternal mortality by 75% and child mortality by two-thirds by the year 2015), the country needs to strengthen the delivery of quality healthcare services including PNC services to HIV-positive mothers and HIV-exposed babies. In addition, an evaluation of PNC services should be conducted. Currently, the researcher has not accessed a countrywide study that evaluated PNC services rendered by midwives to HIV-positive mothers and their babies.

In an effort to meet the MDGs, and to minimise MTCT of HIV, the KoS, MoH (2010a) adopted clinical guidelines for PNC with the aim of standardising clinical practice, reducing MTCT of HIV and ultimately improving maternal and child health. The clinical guidelines have been circulated in clinical areas but their effectiveness has not been evaluated scientifically. The researcher aimed to evaluate the quality of care rendered to HIV-positive mothers and their infants during the post-natal period.

#### 1.2.2.2.1 Core postpartum care for HIV-positive mothers in Swaziland

Quality PNC of HIV-infected mothers can reduce the risk of complications and deaths as well as promote the health of the mother and the baby (KoS, MoH 2010a:39). Warren, Daly, Toure and Mongi (2006:80) estimated that, if PNC and curative care in the post-natal period could reach 90 per cent of babies and their mothers, about 4% to 27% infant mortality could be averted. This implies that quality PNC could save about 310 000 newborn lives a year in Africa (Warren *et al.* 2006:80).

The Swaziland Ministry of Health (MoH) (2010a:43–45) outlined the following guidelines for all midwives to ensure that quality PNC is provided to HIV-positive mothers and their HIV-exposed infants. Midwives must take a detailed post-natal history, perform a complete physical examination (including vital signs), offer HIV counselling, safe infant feeding counselling and early infant diagnosis (EID) to determine infants who are HIV-infected so that they can be initiated on antiretroviral therapy (ART) and further be encouraged to disclose their HIV status. HIV-positive mothers should be screened for opportunistic infections (OIs), which can increase the risk of MTCT of HIV (EGPAF 2010:23). Eligible HIV-positive mothers should be initiated on ARV prophylaxis, which includes zidovudine, Nevirapine and lamivudine and be given co-trimoxazole prophylaxis. Those with a CD4 cell count of less than 350 copies/ml should be initiated on ART.

The KoS, MoH (2010a:63) adopted the WHO clinical staging criteria which assist midwives and other healthcare professionals to diagnose and manage HIV and AIDS. These criteria are presented in four stages. Stage 1 is the asymptomatic stage where MTCT of HIV can occur, since the viral load may be less than 10 000 copies/ml and MTCT rate is at 16.6% (Chouraya 2011:9). Stage 2 occurs when skin and mucosal opportunistic infections appear. Any contact with body fluids from these tissues may enhance MTCT of HIV (KoS, MoH 2010a:63), as the viral load is less than 50 000 copies/ml and the MTCT rate is 21.3% (Chouraya 2011:9).

Stage 3 is characterised by mild to severe OIs (KoS, MoH 2010a:63), the viral load is less than 100 000 copies/ml and the MTCT rate is 30.9% (Chouraya 2011:9). Stage 4 manifests with severe or life-threatening OIs (KoS, MoH 2010a:63), the viral load is greater than 100 000 copies/ml and the MTCT rate is about 40.6% (Chouraya 2011:9). During stages 3 and 4, the CD4 cell count is low (between 200–300 copies/ml) providing a greater risk of MTCT of HIV (KoS, MoH 2010a:27). Therefore, mothers should be counselled on the importance of monitoring their CD4 cell count and its significance on the MTCT of HIV. Midwives must always determine eligibility for ART or antiretroviral drug (ARV) prophylaxis and co-trimoxazole prophylaxis in order to initiate HIV treatment early and so reduce the risk of MTCT of HIV.



The KoS, MoH (2010a:12), in line with UNAIDS (2009) recommendations, states that prevention of mother to child transmission of HIV is strategically implemented through a four-pronged approach:

- Prong 1 = primary prevention of HIV infection among women of childbearing age. This implies that women should be educated about HIV MTCT and be tested for HIV in order to plan for a safe (HIV-free) pregnancy.
- Prong 2 = prevention of unintended pregnancies among HIV-positive women. HIV-positive women should be counselled, educated and provided with effective family planning services in order to prevent unplanned pregnancies.
- Prong 3 = prevention of MTCT from HIV-positive women to their babies during pregnancy, during labour (through safe delivery practices), during safe infant feeding practices and antiretroviral (ARV) prophylaxis.
- Prong 4 = care (including PNC), support of and treatment for HIV-positive women and their families.

A clear referral system for eligible HIV-positive mothers should be implemented in any of the prongs (KoS, MoH 2010a:12).

#### 1.2.2.2.2 Core postpartum care for HIV-exposed infants in Swaziland

The KoS, MoH (2010a:45) advises that the HIV status of mothers should be established to enable relevant care to infants. For HIV-exposed infants, ARV drug prophylaxis through Nevirapine (NVP) is initiated after birth (KoS, MoH 2010b:36). Early infant diagnosis through polymerase chain reaction (PCR)-DNA test is used to determine the HIV status of the infant and to initiate ART if the infant is HIV-positive (KoS, MoH 2010a:54). An infant who is HIV-negative is offered prophylactic treatment of NVP (KoS, MoH 2010a:49). If the mother is on ART, the infant should be started on prophylactic NVP until she/he is six weeks old. If the infant is not eligible for ART, she/he infant should take NVP until one week after cessation of breastfeeding (KoS, MoH 2010a:49). If the HIV-exposed infant is on exclusive replacement feeding, the infant should take NVP for six weeks (KoS, MoH 2010a:49).

Midwives should perform physical examinations, administer immunisations (as guided by the expanded programme on immunisation schedule), and offer safe infant feeding counselling, which may be exclusive breastfeeding or exclusive replacement of breast milk (KoS, MoH 2010a:46). Mixed feeding should be avoided as it corrodes the gastro-intestinal track and enhances MTCT of HIV (KoS, MoH 2010a:46). Screening for other infections must be done, such as tuberculosis (TB), which lowers the immunity and which may be a HIV co-infection (KoS, MoH 2010a:58). It is the responsibility of midwives to screen every PNC client for HIV infection (ICM 2002:10).

### **1.3 THE RESEARCH PROBLEM**

Polit and Beck (2004:731) state that a research problem is a situation involving an enigmatic, perplexing or conflicting condition that can be investigated through disciplined inquiry. In this study, an evaluation of care provided to HIV-positive mothers and their HIV-exposed infants was done by means of scientific inquiry. The researcher observed gaps in the manner midwives were offering PNC interventions to HIV infected mothers and their HIV exposed infants, in selected health facilities, especially during the 3<sup>rd</sup> to 14<sup>th</sup> day and 6 weeks visits. Midwives were not providing comprehensive postnatal care to mothers and their infants. Client education on self-care principles of postnatal care was not provided; guidance related to infant nutrition and HIV prophylactic treatment was minimal yet maternal and infant mortality was high (589 per 100,000 live births and 85 per 1000 live births respectively (KoS, MoH 2011a:6).

The poor quality of PNC rendered by midwives in selected health care facilities, prompted the researcher to conduct a scientific inquiry into the quality of care rendered to HIV-positive women and their infants during the post-natal period.

#### **1.3.1 Statement of the research problem**

Swaziland statistics report a high maternal mortality rate of about 589 per 100 000 live births (KoS, MoH 2011a:6) and a high infant mortality rate of about 85 per 1 000 live births (KoS, CSO 2008:110). HIV infection among pregnant women stands at

41.1% (KoS, MoH 2010a:10). Since the majority of maternal deaths occur during the first 48 hours of the post-natal period (Ziyane & Thwala 2010:16), one could infer that there might be a problem in the quality of PNC rendered by midwives. Factors contributing to the quality of PNC were studied, including personal, socio-cultural, institutional factors as well as resources, knowledge and attitudes related to MTCT of HIV.

## **1.4 AIM OF THE STUDY**

The aim of the study was to evaluate care rendered by midwives to HIV-positive mothers and their HIV-exposed infants during the puerperium.

### **1.4.1 Research purpose**

The purpose of this study was to evaluate care rendered to HIV-positive women and their infants during the first six weeks of postpartum, and to assist midwives to strengthen PNC services in an effort to improve health outcomes for HIV-positive mothers and their infants and will ultimately reduce childhood morbidity and mortality among HIV positive mothers and infants. Current data reports high maternal and infant mortality rate (589 per 100 000 live births, and 85 per 1 000 live births respectively). This data indicates a need for midwives to offer quality postnatal services in order to improve maternal and child health.

### **1.4.2 Research objectives**

The research objectives indicated the specific information the study had to yield and the detailed research questions that had to be answered. These objectives are often stated in clear and unambiguous operational terms and they identify the individual components of what will be achieved (Joubert & Ehrlich 2010:62).

The objectives of the study were to:

- evaluate PNC services provided to HIV-positive mothers during the first 6 weeks of postpartum;
- assess care rendered to HIV-exposed infants; and
- identify gaps in the delivery of quality PNC.

### **1.4.3 Hypothesis**

HIV-infected mothers and their HIV-exposed infants cannot access quality PNC during the first six weeks of postpartum.

## **1.5 SIGNIFICANCE OF STUDY**

Scaling up of ARV prophylaxis may assist Swaziland to attain its goal of eliminating paediatric HIV by the year 2015 (KoS, MoH 2010a:10). The study contributes towards offering quality post-natal care to both mothers and children. The results of this study informed the National Sexual Reproductive Health Unit (SRHU) on the quality of care provided to HIV-positive mothers and their infants. The SRHU is a programme commissioned by the Swaziland Ministry of Health (MoH) to offer quality reproductive health service and to enforce and monitor quality PNC services as indicated in the KoS, MoH PMTCT guidelines (2010a:1-78). The research findings demonstrated the need to strengthen pre-service and in-service midwifery education in PNC services in an effort to curb puerperal complications including HIV and AIDS.

## **1.6 DEFINITIONS OF KEY CONCEPTS**

### **1.6.1 Quality of care**

Judith (1990:62) defined quality of care as the way individuals and clients are treated by the system providing care. In this study, quality of care is the provision of PNC services to HIV-positive mothers and their infants, and the manner in which PNC services are offered by midwives in light of the recommendations in the KoS, MoH (2010a:39-58) guidelines.

### **1.6.2 Post-natal care (PNC)**

This is care given to meet the needs of the mother and the baby from birth to 6 weeks after delivery, to reduce the risk of complications and deaths as well as to promote the health of the mother and baby. During this period, there are specific midwifery interventions to be rendered to HIV-positive mothers and their HIV-

exposed infants (KoS, MoH 2010a:44). For the purposes of this study, post-natal care included physical examinations, on-going psychosocial counselling, provision of prophylaxis (antiretroviral, co-trimoxazole, Isoniazid), administration of immunisations (BCG, polio), and taking blood samples for laboratory analysis. For the mother this included CD4 cell count, liver function test, kidney function test and haemoglobin. For the baby, it was PCR-DNA at six weeks (KoS, MoH 2010a:41).

### **1.6.3 Post-natal period**

The post-natal period is a period of recovery from pregnancy-related effects and childbirth (Shah & Say 2006:3). During this period, the woman's body attains the pre-pregnancy state while the baby is adapting to the extra-uterine environment. The period extends up to six weeks after delivery (Makumbe 2001:7). In this study, post-natal period will mean the period from birth to six weeks after birth.

### **1.6.4 HIV-positive mother**

An HIV-positive mother is a mother who has been tested for HIV and who has been found to have the HIV in her blood (KoS, MoH 2010a:33). In this study, HIV-positive mothers will be those who tested HIV-positive during pregnancy and labour and during the postpartum period (KoS, MoH 2010a:33).

### **1.6.5 HIV-exposed infants**

This refers to an infant who has been born from an HIV-positive mother and whose HIV status has not yet been confirmed by the PCR-DNA test (KoS, MoH 2010a:43).

### **1.6.6 Midwife**

A midwife is a person who, having been admitted to a midwifery educational programme, duly recognised in the country in which it is located, has successfully completed the prescribed course of studies in midwifery and has acquired the requisite qualification to be registered and/or legally licensed to practice midwifery. A midwife is a primary healthcare provider whose services are guided by the individual

needs of each mother and baby. Her/his abilities and knowledge are related to the health, physiology and effective care during pregnancy, birth and after birth. She/he acts in a humane, receptive and flexible manner, based on evidence or practical experience. She/he is willing to update her/his knowledge continually while maintaining a practice of meticulous care with minimum intervention (International Confederation of Midwives (ICM) 1992:1).

### **1.6.7 Peuperium or postpartum**

According to Mazumdar (2011:1), the peuperium or postpartum period is the period following the delivery of the baby during which the body tissues, especially the reproductive system, revert back to the pre-pregnant state, both anatomically and physiologically. The postpartum period lasts for 6 weeks, and it is divided into three phases:

- immediate postpartum: the 24-hour period immediately following delivery (where assessment of the mother and the infant is crucial);
- early postpartum or peuperium: up to 7 days (when the uterus involutes, lochi are expelled, breastfeeding is well established and the psychological state imbalanced (Mazumdar 2011:1); and
- remote postpartum: up to 6 weeks after birth, when the physical, psychological and reproductive state fully recover (Mazumdar 2011:1).

### **1.6.8 HIV prophylaxis**

This is a prevention strategy in which an HIV-negative or HIV-exposed person takes antiretroviral medication (ARV) daily to reduce the chances of becoming infected with HIV (KoS, MoH 2010a:49). In this study, HIV prophylaxis included taking of antiretroviral medication by the mother and her infant for a short duration in order to prevent MTCT of HIV.

### **1.6.9 Acquired immune deficiency syndrome (AIDS)**

This is a severe immunological disorder caused by the HI retrovirus, resulting in a defect in cell-mediated immune responses that is manifested by increased susceptibility to opportunistic infections. It is transmitted primarily by exposure to contaminated body fluids, especially blood and semen and through MTCT of HIV (Nancy, Evans & Terlonge 2010:12)

### **1.6.10 Human immunodeficiency virus (HIV)**

HIV refers to a retrovirus that causes AIDS by infecting helper T-cells of the immune system. The most common serotype, HIV-1, is distributed worldwide (Nancy et al 2010:9). In Swaziland, HIV type 1 is the cause of common infections (Chouraya 2010:7)

### **1.6.11 CD4 count**

The CD4 cells are also known as T4 or helper cells. They are lymphocytes (a type of white blood cell), which are key in both humoral and cell-mediated immune responses (WHO 2007:9). These are the main target cells for HIV. Their numbers decrease during HIV infection, and their level is consequently used as a marker of progression of the infection. When their CD4 cell count is less than 350, HIV-positive mothers must be initiated on ART to prevent MTCT of HIV, but when CD4 cell count is above 350 HIV-positive women must be initiated on ARV prophylaxis (KoS, MoH 2010a:27).

### **1.6.12 Antiretroviral drugs**

These are drugs that suppress HIV replication in HIV-positive people and may also help protect healthy people who are exposed to HIV who take them as prescribed to protect these people against the virus (WHO 2007:9). The KoS, MoH (2010a:32) recommends zidovudine and lamivudine for post-natal women who are not eligible for ART, and Nevirapine syrup for HIV-exposed infants.

## 1.7 FOUNDATIONS OF THE STUDY

### 1.7.1 Theoretical framework

The conceptual framework for the quality of obstetric care was developed by Morestin *et al.* (2009). This framework evaluates the quality of care essential at all points along the obstetric care continuum (Morestin *et al.* 2009:1). The framework identifies three components for evaluating the quality of reproductive healthcare services provided to clients, including PNC. These are discussed by Morestin *et al.* 2009:3–11) and are summarised in the paragraphs below.

#### 1.7.1.1 Structure

##### 1.7.1.1.1 Human resources

Morestin *et al.* (2009:3) refer to human resources as the professionals responsible for obstetric care. In an intensive sector, such as healthcare services, human resources have a major influence on the quality of services provided. If quality PNC is to be attained, availability of midwives to render quality PNC is a prerogative (Morestin *et al.* 2009:3). Midwives responsible for PNC must be productive, because they possess relevant qualifications, knowledge and skill to render quality care. Human resources management is crucial in ensuring the steady availability of staff, and defining their responsibilities, motivating and retaining them (salaries paid on time) (Morestin *et al.* 2009:5). These resources were investigated in this study.

##### 1.7.1.1.2 Material resources

These refer to medication, consumables, diagnostic equipment, infrastructure and transport (Morestin *et al.* 2009:4–5). Any shortfall in these resources is associated with poor outcome (Morestin *et al.* 2009:4). There are additional resources required for providing PNC, especially for HIV-positive mothers and their HIV-exposed infants: ARV drug prophylaxis (zidovudine, lamivudine and Nevirapine), co-trimoxazole prophylaxis, Isoniazid prophylaxis, BCG, and polio, consumables including



Nevirapine syringes and clips). These must be available, to enhance quality PNC services.

The government of Swaziland and development partners have pledged to procure ARV medication and relevant supplies. Therapeutic and diagnostic equipment are also an essential resource in rendering quality care (Morestin *et al.* 2009:6). These include thermometers, sphygmomanometer, HIV determine tests, HIV unigold tests and PCR-DNA tests. Additionally, safe water, electricity, support services (sterilisation and laundry) are essential for providing PNC. The infrastructure in which obstetric care is provided influences the quality of care (Morestin *et al.* 2009:6). Telephones are important for communication, while ambulances and cars are essential for ferrying patients to a referral maternity ward. These are all essential components of quality PNC services.

#### 1.7.1.1.3 Organisational resources

Morestin *et al.* (2009:5–7) state that organisational resources include human resource management, registers and medical records, obstetric protocols, supervision, continuing education, quality assurance measures, logistics, repair and maintenance, financial arrangements and linkage between health services and the community.

Other organisational resources that contribute to quality PNC are registers and medical records. These support continuity of care provided to patients by different professionals, with information on observations made and treatments previously provided (Morestin *et al.* 2009:6). PNC registers; antenatal cards and child welfare cards are important documents for PNC services and were investigated in this study.

#### 1.7.1.2 Process

In this component, two perspectives are considered: the single provider–patient interaction and the episode of care (that is, the entire set of single interactions and

the way they are linked from the beginning to the end of the patient's treatment) (Morestin *et al.* 2009:7).

#### 1.7.1.2.1 Single interaction

Technical performance consists of applying science and medical technology in order to optimise benefits or the patient without increasing risks (Morestin *et al.* 2009:7). This distinguishes appropriateness of PNC interventions, especially for HIV-positive mothers and HIV-exposed infants, where special care must be provided (Morestin *et al.* 2009:8). This evaluation consists of assessing the interventions against national standards for PNC provision (as outlined in the KoS, MoH 2010a), which are based on midwifery knowledge in effect at a given moment in PNC (Morestin *et al.* 2009:8). Non-technical performance is observed in the management of interpersonal relationships with mothers, to which amenities contribute, namely characteristics of the setting within which care is provided and which helps put the patient at ease (for example, not only are there curtains – a material resource – in the PNC room, but the midwives actually take care to close them to protect the mothers' privacy) (Morestin *et al.* 2009:8).

The mothers see interpersonal relationship with midwives as one of the major components of quality PNC (Morestin *et al.* 2009:8). The quality of non-technical performance is assessed on the basis of ethical standards for midwives (patient information, confidentiality, etc.), but it also relates to mothers' expectations (Morestin *et al.* 2009:9). These aspects were investigated in this study since midwifery practice is guided by the midwifery ethical code of practice (ICM 2002:7).

#### 1.7.1.2.2 Episode of care

Evaluating the quality of care within a broader time frame is particularly relevant when it comes to PNC services, which unfold over periods of hours, days and even weeks, and involve succession of single interactions (Morestin *et al.* 2009:9). At the level of the episode of care, quality depends on single contact and continuity of services and the referral system (Morestin *et al.* 2009:9). The timeliness of PNC

interventions – once the mother is in the healthcare facility setting – is crucial for quality care to be enhanced PNC (Morestin *et al.* 2009:9).

### **1.7.1.3 Outcome**

The quality of PNC services can be evaluated in terms of their health consequences on maternal and infant morbidity and mortality, the cost of services to the mothers and satisfaction with the care received by clients (Morestin *et al.* 2009:9).

#### **1.7.1.3.1 Mortality**

According to Morestin *et al.* (2009:1), every year, 529 000 maternal deaths occur in developing countries. Swaziland is no exception to this state of affairs as MMR is as high as 589 per 100 000 live births (KoS, CSO 2008:242). Access to quality PNC services would prevent 50% to 70% of these deaths (Morestin *et al.* 2009:1). Provision of quality PNC to HIV-positive mothers and HIV-exposed infants cannot only prevent MTCT of HIV, which currently is at 10% to 12% in Swaziland (KoS, MoH, Department of Health Management Information System (HMIS) 2009:33), but will also promote maternal and infant health, and reduce the maternal and infant mortality rate (KoS, MoH 2011a:6). In 2009 alone, an estimated 107 000 paediatric HIV infections were averted through PMTCT services globally (EGPAF 2011:1). This indicates that efforts can be made to eliminate MTCT of HIV among Swazis.

#### **1.7.1.3.2 Morbidity**

This has to do with short- or long-term complications related to poor PNC services (Morestin *et al.* 2009:10). Poorly managed HIV-positive mothers may have low CD4 cell counts, which will enhance MTCT of HIV and promote progression to AIDS stage (KoS, MoH 2010a:33). This may ultimately increase the risk of HIV infection among infants, which may increase the morbidity and mortality rate.

#### **1.7.1.3.3 Abusive expenses charged to women**

Exaggerated cost is a flagrant sign of bad practice, and that is the charging of abusive unofficial fees by certain service providers (Morestin *et al.* 2009:11). The

current study did not investigate the fee structure in the study sites as most were public facilities.

#### 1.7.1.3.4 Mothers' satisfaction with PNC

If structure and process can meet, mothers' satisfaction with the PNC services may be achieved (Morestin *et al.* 2009:11). The HIV-positive mothers' opinions on the quality of PNC services must be investigated. This is crucial because the perception of PNC services is a determining factor in the decision to attend PNC services in healthcare facilities (Morestin *et al.* 2009:11). If quality PNC is to be achieved, mothers' satisfaction with the PNC they receive must be investigated.

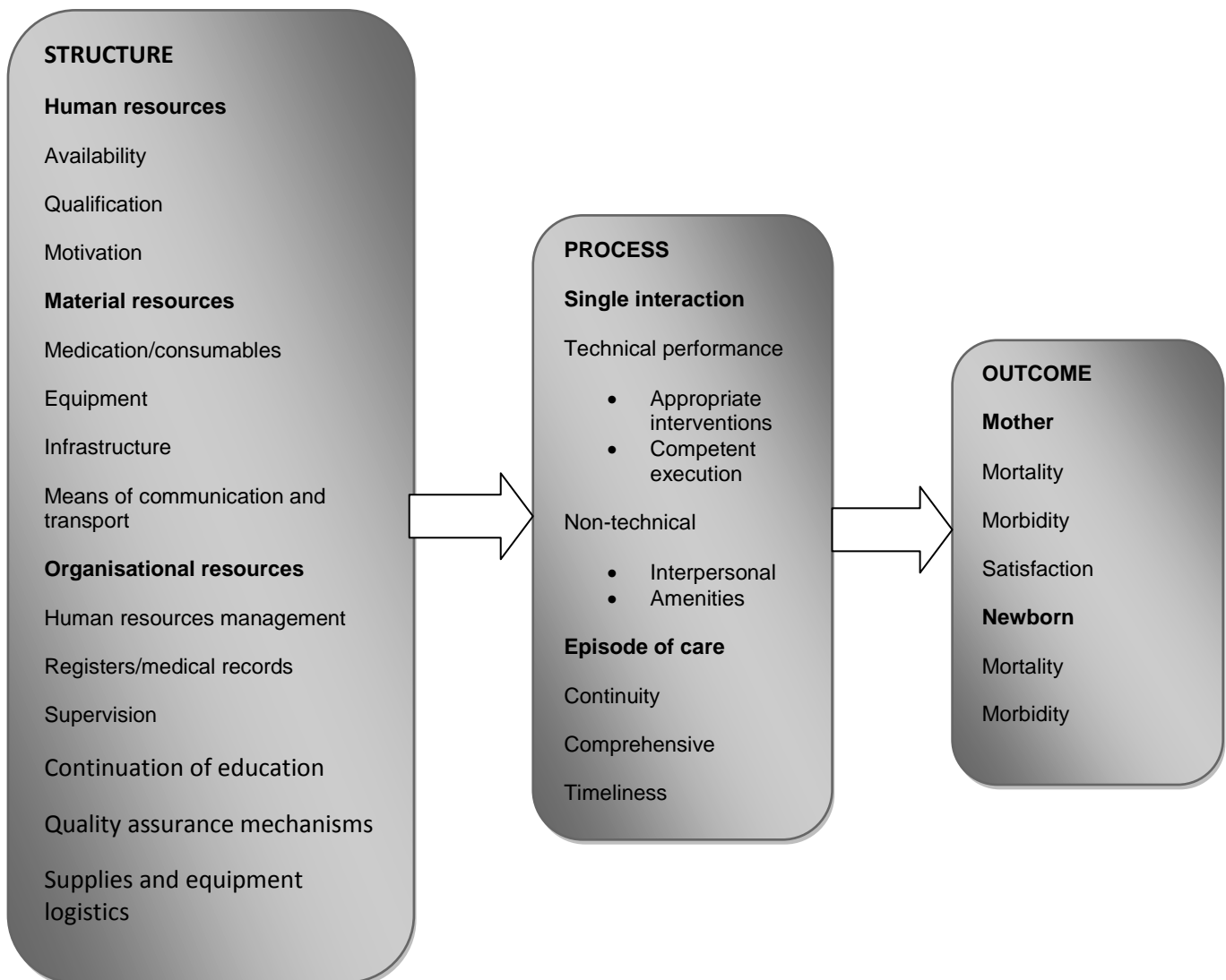


Figure 1.1 Framework for the quality of obstetric care

Adapted from: Morestin *et al.* (2009:12)

## **1.8 RESEARCH DESIGN AND METHOD**

### **1.8. 1 Research method**

The study was quantitative in nature as it investigated PNC services to HIV-positive mothers and their HIV-exposed infants. The quantitative approach was ideal for this topic in order to demonstrate variables related to the quality of PNC (Joubert & Ehrlich 2010:78).

### **1.8.2 Research design**

A quantitative descriptive non-experimental study was conducted. Polit and Beck (2004:716) define quantitative descriptive design as research studies that have as their objective the accurate portrayal of the characteristics of persons, situations or groups and/or the frequency with which certain phenomena occur.

### **1.8.3 Study setting**

The study setting is the environment within which the researcher collects data pertinent to the problem under observation (Polit & Beck 2004:28). The study was conducted at Mbabane Public Health Unit (PHU), Pigg's Peak PHU, Dvokolwako PHU, Nhlangano PHU, Raleigh Fitkin Memorial Hospital Maternal and Child Health Unit, Good Shepherd PHU, Siteki PHU, Hlatikulu PHU and King Sobhuza II PHU. These facilities provide maternal and child health (MCH) services. The PHUs were chosen because they offered MCH services, which include PNC services. Women who had delivered babies in hospitals are referred to PHUs and clinics for PNC follow-up.

The setting for this study was naturalistic, in a place where HIV testing, counselling and anti-retroviral administration takes place, and no control or manipulation was imposed upon respondents (Madisha 2008:10). A naturalistic setting is a real-life situation where nature takes its course without any interference (Burns & Grove 2005:326).

#### **1.8.4 Population**

A population is a set of individuals who meet the sampling criteria, and sampling involves selecting a group of people with whom to conduct a study (Burns & Grove 2005:342). A total of 372 HIV-positive mother–infant pairs, who presented for post-natal examination at six weeks, were recruited to participate in the study, as they were likely to generalise usable data (Polit & Beck 2004:734).

#### **1.8.5 Sampling**

Sampling is the process of selecting elements or respondents representative of the populations under study (Polit & Beck 2008:765). The sample size of the research study was 372 HIV-positive mothers inclusive of their infants, who had attended their 6-week post-natal care visits at the selected study sites. A non-probability purposive sampling technique was used to select the sample. This sampling technique was selected because only participants with specific criteria were studied (HIV-positive women and their HIV-exposed infants).

This technique was economic and accurate (William 2011:2). The disadvantage of using this technique is the inaccuracy in the researcher's criteria and resulting sample selection (William 2011:2). This limitation was addressed by confirming the data gathered from the client by checking the antenatal care card to determine the HIV status of the mother and the infant's health card to determine the HIV-exposure status to enhance accuracy in sample selection.

#### **1.8.6 Data collection instrument**

Data was collected using a structured interview schedule. A structured interview schedule enabled the investigator “to be consistent in asking questions and data yielded are easy to analyse” (Polit & Beck 2004:349). The benefits of using face-to-face interviews are its strength in directness and versatility, frequently yielding information that would be difficult if not impossible to gather by any other means, and face interview can be used to capture psychological characteristics (Gillis & Jackson 2002:466).

The disadvantage is lack of consistency of information provided (Polit & Beck 2004:320). The purpose and the aim of the study were clearly outlined, and participants were sincerely requested to respond truthfully.

### **1.8.7 Data management**

After the questionnaires had been completed, they were checked for completeness and kept safely in the EGPAF strong room until the analysis phase (Coughlin, Beauchamp & Weed 2009:85).

### **1.8.8 Data analysis**

Data was analysed using descriptive statistical strategies as advised by Polit and Beck (2004:716). The benefit of using this strategy was that it allowed the researcher to employ measures such as frequency distributions, and variability and measures of relationship. The Epi info version 3.5.2 software was used for data analysis in this study.

### **1.8.9 Ethical considerations**

When humans are recruited to be study participants, ethical issues must be adhered to, in other words, the rights of participants should be protected. The researcher was guided by the research code of ethics, particularly the sensitive nature of the respondents since they were HIV-positive. Approval from the University of South Africa (UNISA) was sought, and consent was obtained from the Ministry of Health in Swaziland (Swaziland Research Ethics Committee), the Regional Public Health Unit matron, senior management at the study settings, and the participants who gave verbal and written consent before participating in the study.

## **1.9 SCOPE OF THE STUDY**

Conducting a study on HIV-positive respondents poses a challenge because of the ethical issues related to the disease process, including stigma and discrimination.

Many ethical considerations had to be upheld in this study, although some respondents were not convinced that the principles were strictly adhered to. However, the researcher ensured that respondents were made to understand that information given was not linked with names and was kept confidential and private.

### **1.10 STUDY LIMITATIONS**

The limitations inherent to the study were: inadequate resources to efficiently conduct the study (time, equipment and office space to ensure privacy). The time frame for conducting the study was limited; a longitudinal study instead of a cross-sectional study would have yielded more reliable data.

### **1.11 STRUCTURE OF THE DISSERTATION**

Chapter 1 of the dissertation deals with the orientation of the study, including the research problem, the source of the problem, the background to the problem and statement of the research problem. It also discusses the aim, research purpose and research objectives of the study.

The significance of the study, definitions of key concepts, and foundations of the study, including theoretical framework of the study are outlined. Additionally, the research design, research methods including the scope and the structure of the dissertation are discussed.

Chapter 2 examines PNC rendered to HIV-positive mothers, use of ARV during the post-natal period, roles of midwives in rendering quality PNC, including essential medical equipment and the impacts of quality PNC.

In Chapter 3, the methodology used in the research is detailed.

Chapter 4 deals with analysis and presentation of research findings.

In Chapter 5, results of the study are discussed, including limitations, recommendations and conclusions of the study.

A list of references used in the dissertation is given at the end, inclusive of used and some consulted but not referenced in the research.



## **1.12 CONCLUSION**

This chapter presented the background information on the research study. It also discussed the research problem, aim of the study, significance of the study, a definition of key terms, foundation of the study, research design, and the research methods. Chapter 2 presents the literature review on quality of PNC rendered to HIV-positive mothers and their HIV-exposed babies.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

The literature review will present studies and documents perused on PNC for HIV-positive mothers and exposed babies. Literature mainly focuses on:

- the goal for PNC;
- the model for PNC;
- risks during the post-natal period;
- midwives;
- the resource for quality PNC;
- essentials for quality provision of PNC;
- organisational structure for quality PNC;
- the post-natal situation;
- ARVs used during the post-natal period; and
- the impact of quality PNC.

The researcher evaluated post-natal care rendered to HIV-positive mothers and their infants. Reviewed documents were extracted from web sites, journals, national and international documents. The reviewed documents covered a period from 1995 to 2012.

#### **2.2 PURPOSE OF LITERATURE REVIEW**

Brink, Van der Walt and Van Rensburg (2006:67) state that the literature review enables researchers to gain knowledge about the research topic based on studies conducted on similar topics. This knowledge assisted the researcher to refine the problem statement, design and data analysis process and it provided a basis for interpreting the research findings.

The process for conducting the literature review involved reviewing studies on post-natal care, PMTCT of HIV, utilisation of ARV medication and ART as a strategy to prevent MTCT of HIV. The researcher consulted the internet, using the following search words: **PNC, MTCT, pregnancy** and **ARVs** to access documents.

The United Nations Population Fund (UNFPA), the Joint United Nations Programme on HIV/AIDS (UNAIDS), the WHO and EGPAF websites were perused. In addition, the UNISA library was consulted and Swaziland government documents were accessed. The literature search revealed that an extensive research on PNC has been conducted and recommendations related to quality care for HIV-positive women and their HIV-exposed infants have been made. Based on these recommendations, the WHO, in 2009, formulated new recommendations on ARV prophylaxis for HIV-positive women and their infants in order to prevent MTCT of HIV during pregnancy, labour and the post-natal period.

### **2.3 POST-NATAL SITUATION**

The WHO (2010b:7) states that the post-natal period poses substantial health risks for both the mother and her infant, yet the post-natal period receives less attention from midwives than pregnancy and childbirth. Moreover, models of PNC have changed little since first developed a century ago. While Mazia, Narayan, Warren, Mahdi, Chibuye, Waligo, Mabuza, Shongwe and Hainsworth (2009:254) state that PMTCT programmes are linked with maternal and neonatal child health (MNCH) services, but much focus is on HIV, resulting in very little attention being given to the post-natal period.

Dhaher, Mikolajczyk, Maxwell and Kramer (2008:1–9) conducted a study on factors associated with a lack of PNC among Palestine women, where a cross-sectional study of participants drawn from three clinics in the West Bank area was undertaken. The purpose of the study was to assess factors associated with a lack of PNC, barriers to PNC and women's attitudes towards using PNC services.

A total of 264 postpartum women attending the three clinics were interviewed, using a structured questionnaire. Data was analysed through the multivariate analysis technique, using the SPSS 12 statistical software (Dhaher *et al.* 2008:3). The results showed that, although a majority of 66.1% of respondents considered PNC necessary, only 36.6% obtained PNC services. Reasons for failure to use PNC services were apparent healthy state, which did not justify PNC services according to 85% of respondents. However, a small number (15.5%) was not aware of PNC services. The use of PNC was higher among respondents who had experienced obstetric problems than those who had spontaneous vaginal delivery. Usage of PNC services was higher among women who delivered in private hospital than among those who delivered in public facilities (41% versus 31%) (Dhaher *et al.* 2008:5–7).

The study identified important factors which were a deterrent to PNC services however there were identified gaps such as access, affordability, attitudes of health care professionals and the quality of PNC services were not investigated, the current study addressed this gap. However, the researcher planned to replicate some aspects of the data collection approach that was used in the above study as it yielded data that was reliable and accurate (Gillis & Jackson 2002:303). The PNC situation revealed is similar to the situation in Swaziland, where 75% of Swazi women do not access PNC services (KoS, CSO 2008:123).

## **2.4 GLOBAL PERSPECTIVE OF POST-NATAL CARE**

The WHO (2010c:1) reports that approximately 1 000 women worldwide die each day from pregnancy-related complications. In 2008 alone about 358 000 women died during childbirth. The causes of maternal death identified related to delay in obtaining quality PNC services (Jacobson 2011:4). Although women attend PNC services, the timing and quality of these services are substandard, as evidenced by the high (99%) maternal mortality rates in developing countries (WHO 2010c:2). According to UNFPA (2009:11), postpartum haemorrhage is the single most important cause of maternal death responsible for 25% of all maternal deaths worldwide.

Neonatal death is a common phenomenon in underdeveloped countries, accounting to 3 million deaths within the first week of life (Warren, Daly, Toure and Mongi 2006:77). WHO (2009c:1) stated that causes of neonatal deaths could be attributed to low birth weight, asphyxia, and sepsis; HIV-exposed babies were more likely to be at risk of childhood infections due to low immunity and AIDS related complications. EGPAF (2011:1) estimates that 1 000 children globally are infected each day through MTCT of HIV; without quality PNC almost half of the newborns will die before their second birthdays. In 2009 alone, an estimated 107,000-paediatric HIV infection was averted through PMTCT services (EGPAF 2011:1)

WHO (2010b:2) recommends that highly skilled health professionals should render effective care and that they should attend every birth in order to prevent MTCT of HIV. However, current data reveals that skilled professionals attend only 66% of childbirths in developing countries (WHO 2010c:2). This situation supports the need to engage midwives who will strengthen PNC services and prevent maternal and neonatal deaths (UNFPA 2010:8).

## **2.5 POST-NATAL IN SUB-SAHARAN AFRICA**

Sub-Saharan Africa is mostly affected by HIV with a prevalence of 10–<20% (UNAIDS 2010:26). Women of childbearing age bear the brunt of HIV as they account for 40% of people living with HIV globally (UNAIDS 2010:28). The rate of maternal deaths due to HIV and AIDS is as high as 9% (WHO 2010c:1). According to Warren *et al.* (2006:79), every year about 125 000 women and 870 000 newborn babies die during the first week after birth.

Traditions and customs which are strong on the continent do not allow mothers to visit healthcare facilities during the critical stage of puerperium (Ziyane & Thwala 2010:16); yet ARV prophylaxis should be offered within 48 hours of birth as well as counselling and support on safe infant feeding practices, and any delay in effective interventions to prevent MTCT of HIV may have fatal consequences to both mother and infant (KoS, MoH 2010a:36–37).

Despite the advantages of early initiation of ART to both mother and baby during the puerperium, Warren *et al.* (2006:80) observed that some midwives fail to advise HIV-positive mothers to access quality post-natal care services. Additionally, PNC programmes appear to lack indicators for monitoring the effectiveness of the service provided (Warren *et al.* 2006:86).

## **2.6 GOALS OF POST-NATAL CARE**

The overall goal of post-natal care is to improve maternal and infants' wellbeing and to reduce maternal and child mortality further (Mazumdar 2011:1). Demott, Bick, Norman, Ritchie, Turnbull, Adams, Barry, Byrom, Elliman, Marchant, Mccandlish, Mellows, Neale, Parker, Tait and Taylor (2006:59) state that PNC should be the continuation of care the mother receives throughout her pregnancy, labour and the birth of the baby. The aim should be to provide consistent care and support during the critical recovery period. During PNC, midwives should competently provide quality care to enhance maternal and newborn health (UNFPA 2010:1; ICM 2002:10).

## **2.7 THE PRINCIPLES OF POST-NATAL CARE**

The principles of quality PNC management as outlined by Mazumdar (2011:1) are to help mothers to recuperate fully, to provide quality midwifery care, to educate mothers on basic care of the baby, to support mother to adopt safe infant feeding practices and to provide safe dual contraceptive practices.

With regard to HIV-positive mothers, the KoS, MoH (2010a:39) indicates a need to offer physical examination, ARV supply, laboratory tests, infant feeding guidance, safe family planning and all the prophylactic treatments for HIV-exposed infants. These are indicators for evaluating the quality of PNC rendered to HIV-positive women and infants in Swaziland, and for identifying gaps in the delivery of quality PNC.

## 2.8 QUALITY IN POST-NATAL CARE

An evaluation of quality in sexual reproductive health services requires a clear definition of quality (Morestin *et al.* 2009:1). In this regard, reproductive healthcare services, quality is defined as the degree of excellence and/or the extent to which a health facility (hospital, health centre, PHU and clinic), providing reproductive healthcare services meets its clients' needs and exceeds their expectation, involve in doing the right thing right, the first time, and improving next time (Muller, Bezuidenhout & Jooste 2006:534).

Quality related to post-natal clients is reported as provision of all the essential components of services specified in the guidelines by the Ministry of Health to be rendered to HIV-positive women and their HIV-exposed infants (KoS, MoH 2010a:39). The researcher used this definition in evaluating the quality of PNC rendered to HIV-positive women and their infants. The researcher also developed the questionnaire based on the Ministry of Health's (KoS, MoH 2010a:1-78) guidelines for PNC information and services to be rendered to HIV-positive women and their infants to evaluate the quality of PNC rendered to this specialised group. Therefore, the gap between what is and what should be done (Morestin *et al.* 2009:1), and the way post-natal women are provided with PNC, was evaluated. Creel, Sass and Yinger (2002:2) attempted to define quality as the way midwives are providing PNC to HIV-positive women and their HIV-exposed infants.

Morestin *et al.* (2009:1) state that a comprehensive approach should be used to evaluate the quality of PNC; therefore, the researcher adopted this approach in evaluating the quality of PNC rendered to HIV-positive women and their infants. The researcher studied the human, material and/organisational resources mobilised to provide PNC services, the services themselves, and the measurements used to capture the consequences of the PNC services on HIV-positive women and their infants.

The WHO, UNFPA and UNICEF provide clear guidance on standard PNC packages as a strategy to attain MDG 4 (which indicates that child mortality must be reduced) and 5 (which supports the improvement of maternal health care by the year 2015).

Quality PNC should be provided to all newborns and their mothers as a concerted strategy to improve maternal and child survival (KoS, MoH 2010a:39).

## **2.9 STANDARDS FOR POST-NATAL CARE**

During the post-natal period, HIV-positive women need information and counselling on care of the baby and breast-feeding. In addition, women need support from midwives, who should involve the mother's partner and her family in the provision of quality care.

The post-natal period poses substantial health risks for both the mother and the infant, more so to HIV-infected mothers (WHO 2010b:1). PNC should include detailed history taking, complete and systematic physical examination, quality counselling on newborn care, breastfeeding, resuming sexual activity, nutrition, provision of prophylaxis and family planning (KoS, MoH 2010a:39). HIV-exposed infants need close and quality physical examination, early HIV testing, immunisations, Nevirapine and co-trimoxazole prophylaxis (KoS, MoH 2010a:51). In 1998, the WHO developed a PNC framework that countries should adopt and offer to all mothers and their infants. The framework for PNC service for Swaziland is presented below.

## **2.10 MODEL FOR POSTNATAL CARE**

The model for PNC that was adopted by the Ministry of Health in Swaziland (2010a:39) is guided by the WHO PNC framework in terms of which women and their babies are assessed within the first hour after birth, during the first six hours, daily until discharge, within the first two weeks, and at six weeks. For women who have given birth at home, PNC services should be offered within the first 48 hours (KoS, MoH 2010a:39). Post-natal care rendered to women includes an assessment of vital signs, a physical examination, an inspection and palpation of the reproductive system, counselling, treatment and support on issues related to HIV and AIDS including safe infant feeding practices (KoS, MoH 2010a:38). The questionnaire



used in this study followed this model, to ensure that the quality of PNC interventions rendered by midwives are in line with the MoH guidelines.

## **2.11 HEALTH RISKS DURING POST-NATAL PERIOD**

Sines, Syed, Walls and Worley (2007:1) report that four million infants die within their first month of life, representing 40% of all child deaths under the age of 5, with most occurring in sub-Saharan Africa, where PNC is much compromised and of poor quality. Both mothers and infants are vulnerable during the post-natal period. Moreover, approximately two-thirds of all maternal deaths occur in the post-natal period (Sines *et al.* 2007:1).

The post-natal period, especially the early phase, is also the most neglected part of reproductive health in Africa (Warren *et al.* 2006:79), hence maternal and child mortality is high. Newborns may stand a better chance of surviving if they can receive quality PNC during this critical time of life. (Warren *et al.* 2006:80). The data collection tool used in this research incorporated all the critical phases of PNC (the immediate postpartum phase, 3-14 days and the 6 weeks period); to evaluate the quality of PNC rendered by midwives to HIV positive mothers and their HIV exposed infants during the critical phases of PNC.

Providing quality PNC during the first days after delivery could improve maternal and infant survival, as this would ensure that mothers establish and maintain contact with a number of health services needed during this critical period (Sines *et al.* 2007:1). Quality PNC depends on the quality of the midwives providing the service. The International Confederation of Midwives (ICM 2002:9) states that midwives are trained professionals commissioned to provide comprehensive, quality PNC for women and their infants. Based on this definition, it is incumbent for midwives to render quality PNC services to all mothers.

## **2.12 FACTORS AFFECTING THE QUALITY OF POSTN-NATAL CARE**

In order to attain quality PNC services, there is need to put in place resources that support quality. These resources include midwives, essential materials, organisational structures, etc., which are discussed below:

### **2.12.1 Midwives as resource for quality PNC**

The availability of midwives is a precondition for the provision of quality PNC, because it is enshrined in the international standard that reproductive healthcare needs of clients must be attended to by professionals (Morestin *et al.* 2009:3). Midwives are the backbone of the reproductive healthcare needs of women, and provide quality maternal and newborn child health (MNCH) services (UNFPA 2009:1).

The Africa Health Workforce Observatory (AHWO) (2009:10) and UNFPA (2009:8) recognise that midwives in Swaziland are the most important assets to deliver quality reproductive health services but noted a weak human resource management within the Ministry of Health due to high staff turnover (AHWO 2009:11). Consequently, the quality of post-natal service may be compromised. However, the deployment of midwives was not analysed in the above mentioned report.

Dogba and Fournier (2009:1482–86) studied human resources and the quality of emergency obstetric care (EmOC) in developing countries. A systematic review of 250 articles that were either quantitative or qualitative empirical studies on quality of EmOC was conducted. These articles were classified into those dealing with structure, process and result.

The findings of the study revealed that skilled birth attendance and PNC are part of the recent strategies to reduce maternal and infant morbidity and mortality, especially among HIV-positive mothers and their infants. The study noted that in Africa, women are still assisted by traditional birth attendants, some with adverse outcomes. The midwifery skills, knowledge and interventions are best suited to produce significant declines in maternal and infant morbidity and mortality rates, as

midwives are able to provide quality PNC. The availability of midwives in the selected study sites was taken into consideration, to effectively evaluate the quality of PNC services provided to HIV positive mothers and their infants by midwives.

The study provided a good base for the researcher to compare findings and to give details on the quality of PNC rendered to HIV-positive mothers and their HIV-exposed infants. The theoretical framework that the researcher used in the current study was influenced by Dogba and Fournier (2009:1482–86) study. The gap or weakness of Dogba and Fournier's (2009:1482–86) study was its vulnerability to the publication bias of the selected studies, as it was a published literature-based study, while unpublished, grey literature, books and monographs were missed (Dogba & Fournier 2009:88).

Olsen, Ndeki and Norheim (2005:1478) conducted a study on human resources for emergency obstetric care in northern Tanzania in terms of the distribution of quantity and quality, to evaluate the status of human resources and especially the quality, availability and distribution. A quantitative facility survey in six districts was conducted and 129 facilities were selected.

Data was analysed through descriptive statistical analysis using the SPSS statistical software package. The results demonstrated that a low utilisation of MNCH facilities was partially due to the poor perception of the quality of care, as a consequence of shortfalls in skilled professionals, and it was consequently recommended that deployment should ensure an adequate mix of clinical skills (Olsen *et al.* 2005:1488). The study results further confirmed that midwives' qualifications alone do not guarantee competence. This was also shown in skill and knowledge evaluations in Benin, Ecuador, Jamaica and Rwanda where midwives scored only 50% in the required skill. Major reasons reported for the gap in theoretical knowledge and skills were inadequate training methods, insufficient practice of learned procedures due to lack of equipment and large variations in clinical protocols (Dogba & Fournier 2009:83).

Olsen *et al.* (2005:1489) concluded that there were adequate midwives for MNCH provisions in the study sites, but also that there were large variations in the availability of qualified staff. More staff was concentrated within urban districts and in voluntary agency and public facilities. Quality PNC completely relies on comprehensive MNCH provision and on a functional reference centre (Dogba & Fournier 2009:80).

The Swaziland Ministry of Health (KoS, MoH 2010b:37) conducted service availability mapping (SAM) to support decision-making for scaling up and scaling out as well as strengthening interventions and services by providing national and regional planners with an evaluation tool for performance measurement in line with the essential healthcare package (EHCP). A cross-sectional design was used for the study. Multistage sampling was done, which followed the non-probability purposive convenience sampling for healthcare workers at regional and facility level (KoS, MoH 2010b:40). The study population comprised all health facilities, regardless of ownership and all technical and professional healthcare workers.

The results showed that midwives form a majority (51.2%) of the country's health workforce and are mostly (57.6%) practicing in public health facilities (KoS, MoH 2010b:86). PNC is offered in the PHUs, hospitals and health centres in the country (KoS, MoH 2010b:190). The availability of midwives alone does not ensure high-quality PNC provision, but the combinations of the basic medical equipment, medical supplies and medication are essential in the provision of quality PNC (KoS, MoH 2011a:39).

### **2.12.2 Essentials for quality provision of PNC**

Essential medical material for quality PNC includes medication and consumables, diagnostic material and blood (in referral facilities set up to do transfusions) (Morestin *et al.* 2009:5). Shortfalls in medical materials necessary for PNC provision have been associated with higher cases of fatality rates (The Prevention of Maternal Mortality Network, 1995, cited in Morestin *et al.* 2009:4).

In the Service Availability Mapping Report of the Ministry of Health (KoS, MoH 2010b:69; KoS, MoH 2011a:39) it was reported that basic equipment availability was more than 90% in all facilities. Of the facilities, 83.5% had PMTCT guidelines in place, 99.6% had electricity, 84% had functional telephones (KoS, MoH 2010b:182), 96.7% facilities had co-trimoxazole, 95.3% had NVP, and 92% had AZT in stock during the survey (KoS, MoH 2010b:184). Of the health facilities in Swaziland, 64.53% provide PNC in the Shiselweni region leading in the proportion of facilities providing PNC. Manzini, Hhohho, Lubombo were found to be 54.81%, 66.20%, 69.81% respectively (KoS, MoH 2010b:190). Noted further was that more government-owned facilities (70.75%) were providing PNC compared to other facilities owned by the private sector, missions, NGOs and industries, which were found to be 57.14%, 97.06%, 50.00%, 30.77% respectively (KoS, MoH 2010b:190).

All hospitals and health centres had an ambulance, but only 25% of the PHUs had an ambulance (KoS, MoH 2010b:68), vaccines available were:

- polio = 97.5%;
- measles and BCG were only available at 8.5% facilities;
- at 76.4% pentavalent was most accessible at government facilities (82.7%); and
- DPT/HBV vaccine was the least available at the facilities = 23.6% (KoS, MoH 2010b:200).

Of the 157 facilities providing child welfare services, the majority (98.1%) had under-5 weighing scales. All the facilities (100%) providing child welfare had the under-5 weighing scales compared to 91.1% in 2008. Hhohho and Manzini also showed an improvement as during the survey, 97.4% and 98.1% respectively had the under-5 weighing scales. Of all the facilities examined, 72.6% could take mid-upper arm circumference (KoS, MoH 2010b:195).

The strengths of the study were that it portrayed a clear picture on service availability in Swaziland (Hulley, Cummings, Browner, Grady & Newman 2007:120). Observation captures directly records behaviours and events (Polit & Beck 2004:321). However, the weaknesses of the study were the high possibility of

distorted behaviour of the participants and the vulnerability to observer bias (Polit & Beck 2004:321). The findings of the study provided a base for the evaluation of PNC rendered to HIV-positive mothers and their HIV-exposed infants, and it also enabled the researcher to compare findings and to reach scientifically sound conclusions and recommendations.

Mazia *et al.* (2009:257) state that, generally, all facilities in Swaziland have the capacity to provide quality PNC. Facilities have rooms, equipment, medicines and supplies. The process of delegating and coordinating tasks and resources to achieve high-quality PNC cannot be over emphasised (Booyens 2008:95). On the other hand, AHW0 (2009:10) noted issues relating to poor quality of PNC services in Swaziland, which includes: insufficient pharmaceutical supplies, deteriorating infrastructure, inadequate equipment and supplies and weak supervision and performance management (KoS, MoH 2011a:39). This current study included the evaluation of basic medical equipment, medical supplies and medications for PNC clients, which were considered to be critical when evaluating the quality of PNC services offered by midwives to HIV positive mothers and their HIV exposed infants.

### **2.12.3 Organisational structure for quality PNC**

Good organisation in MNCH facilities may help to ensure that high-quality services are achieved. This will enables work analysis, allocation of responsibilities, accountability, clear channels of communication, productive utilisation of resources, division of work, co-ordination of activities, prevention of duplication and clear lines of authority in the provision of PNC (Booyens 2008:95–96).

“Human resources management is a crucial factor in ensuring the steady availability of staff (organization of teams), defining their responsibilities (position descriptions), motivating and retaining them (salaries paid on time, systems of sanctions and rewards, etc.) (Morestin *et al.* 2009:5).”

In Swaziland, nursing personnel in the facilities is managed by nursing sisters and/or senior nurses, whose mandate is to ensure flow of work within the facilities, in other

words compiling work schedules, providing supportive supervision of care rendered to clients, and ensuring that necessary supplies are available timeously to clients and further overseeing the logistics and maintenance of health facilities (African Health Workforce Observatory (AHWO) 2009:17).

### **2.13 ANTIRETROVIRAL MEDICATION USE DURING THE POST-NATAL PERIOD**

In November 2009, the WHO issued new PMTCT recommendations, stressing the benefits of earlier initiation of ART during pregnancy and its continuation throughout the delivery and the breastfeeding periods. A key recommendation of these guidelines is to start ART for all HIV-positive women with a CD4 count below 350 cells/mm, irrespective of clinical stage. This makes access to CD4 testing more crucial than ever for the successful implementation of PMTCT programmes, since clinical staging performs poorly in identifying pregnant women eligible for ART (WHO 2009b:17). ARV use during pregnancy, labour and the post-natal period has proved not only to reduce MTCT of HIV, but also to reduce maternal and infant mortality among HIV-positive mothers (WHO 2009b:16; KoS, MoH 2010a:26).

Jaspan and Garry (2003:325) report that MTCT of HIV type 1 has become rare in developed countries, with the use of highly active antiretroviral treatment, elective caesarean section, and avoidance of breastfeeding. In the developing world, however, these interventions are unfeasible, and cost-saving methods for prevention of vertical transmission are vital. Prevention begins with voluntary counselling and testing, improved maternal education and access to prenatal care (KoS, MoH 2010a:17). Various types of antiretroviral medication administered before, during, and for short periods after delivery have decreased vertical transmission (Jaspan & Garry 2003:326). Post-natal transmission via breast milk remains a major challenge (Jaspan & Garry 2003:327).

Mnyani and McIntyre (2009:75) state that HIV transmission from mother to child remains a major cause of infant morbidity and mortality in resource-poor settings. There is consensus that women who need antiretroviral treatment should receive this during pregnancy and beyond, and that an appropriate antiretroviral prophylactic

regimen should be started with those who do not need on-going therapy (WHO 2009b:16; KoS, MoH 2010a:31). Infant feeding remains a major source of paediatric HIV infection, and new antiretroviral strategies for mothers or children are emerging with the potential to control this (Myani & McIntyre 2009:75). Access to HIV testing and antiretroviral treatment or prophylaxis remains very limited in low-resource settings and needs to be expanded (Mnyani & McIntyre 2009:76).

Approaches to reduce or prevent the risk of post-natal transmission through breast-feeding include use of ARVs, assessment of rates and risk factors for mother-to-child transmission; and efficacy of the interventions to be applied during the breast-feeding period (Rollins & Meda 2004:192; KoS, MoH 2010a:40). Adherence to these approaches could lead to better results.

Zolfo, De Weggheleire, Schouten and Lynen (2010:287) report that significant progress has been made in the PMTCT of HIV. In 2008, an estimated 1.4 million pregnant women living with HIV in low- and middle-income countries gave birth and almost half of these accessed antiretroviral medication to prevent HIV transmission to their infants, which ranged from single-dose Nevirapine to full combination antiretroviral therapy. Much more remains to be done in terms of post-natal treatment and care.

Zolfo *et al.* (2010:289) state that there are still many barriers to accessing CD4 testing in remote health structures implementing maternal care services, particularly in countries with a high HIV prevalence. In these settings, universal ART initiation among HIV-positive pregnant women, irrespective of CD4 cell count or clinical staging, is a potentially superior strategy for PMTCT.

In efforts to prevent post-natal MTCT of HIV, the Swaziland Ministry of Health (KoS, MoH 2010a:31) states that HIV-positive women eligible for ART should be initiated as soon as possible, and their infants should be on NVP syrup for six weeks. Those not yet eligible for ART should be initiated on ARV prophylaxis and their infants should be on NVP syrup until one week after cessation of breastfeeding (KoS, MoH 2010a:32). The HIV pandemic has greatly affected women of childbearing age in



developing countries and, thus, their offspring, through MTCT of HIV (Dabis & Leroy 2000:241).

In a study conducted by Noel, Mehta, Zhu, Rouzier, Marcelin, Shi, Nolte, Severe, Deschamps, Fitzgerald, Johnson, Wright and Pape (2008:3723) on improving outcomes in infants of HIV-infected women in a developing country setting. The goals of the study were to evaluate the PMTCT programme in the context of its effectiveness in reducing paediatric HIV infection and increasing the survival of infants born to HIV-positive women, and to identify risk factors for MTCT of HIV and mortality in the first 15 months of life (Noel *et al.* 2008:3723).

In Noel *et al.* (2008:3723) study a cohort study of 551 infants born to HIV-positive mothers was the target population. A cohort study was able to establish a sequence of events and a number of outcome events grow over time (Hulley *et al.* 2007:120). The sequential introduction of interventions gave an opportunity to identify key elements of success in the PMTCT as well as barriers to effective implementation, and the fact that participants' information was de-identified were strengths of the study (Noel *et al.* 2008: 3723). Univariate and multivariate data analysis were done.

The use of highly active antiretroviral therapy (HAART) in HIV-positive women showed a decrease in MTCT of HIV from 27% to 10% in pre-treatment (Noel *et al.* 2008: 3723). Even though the researcher did not focus on post-natal transmission of HIV, the effects of maternal health, infant feeding, completeness of prophylaxis, birth weight and laboratory tests discussed in the study (Noel *et al.* 2008:3723) enabled the researcher to modify parts of the data collection tool to capture additional key information, and to make concrete recommendations on the study of post-natal HIV transmission among women and their infants in Swaziland.

## **2.14 IMPACT OF QUALITY POST-NATALCARE**

Warren *et al.* (2006:80) state that it has been estimated that, if routine PNC and curative care in the post-natal period reached 90% of babies and their mothers, 10 to

27% of newborn deaths could be averted. This implies that high-quality PNC coverage could save up to 310 000 newborn lives a year in Africa.

Lemly, Mandelbrot, Meier, Firtion, Matheron, Jeantils and Scott (2007:346) examined factors related to medical appointment attendance after childbirth among HIV-infected women in the Paris region. This was an observational cohort in four Paris hospitals. The strength of the study was the ability to record people's behaviour and events directly (Polit & Beck 2004:321). The vulnerability to emotions, prejudices, attitudes and values of the observers was a weakness of the study (Polit & Beck 2004:321).

A multivariate technique was used to analyse data. According to Lemly *et al.* (2007:352), results showed that 75% had regular attendance, 14% had irregular attendance and 18% had no attendance. The prescription of ARV combination therapy during pregnancy was significantly related to regular post-natal attendance, and 47% continued to attend regular paediatric appointments. Communication between the healthcare providers and the post-natal mothers demonstrated an increase in post-natal appointment attendance (Lemly *et al.* 2007:354).

Warren, Mwangi, Oweya, Kamunya and Koskei (2009:24) conducted a study on safeguarding maternal and newborn health and improving the quality of PNC in Kenya to assess changes in the quality of care following the introduction of a new post-natal package. The study population was health providers and postpartum women. A pre-post intervention cross-sectional design was used to assess changes in the quality of counselling of care following the introduction of a new post-natal package. Participants were purposefully selected. Direct observation of client-provider interactions were used to measure the quality of PNC.

Data was analysed in two stages using Epi info and exported to SPSS for final analysis. The results showed increased mean score for counselling on infant danger signs (0.24–1.39), infant feeding (1.33–2.19). The total quality of PNC index for the newborn increased but remained lower than desired from (3.337 to 6.45 out of 11) and the essential maternal index improved (3.4–8.72 out of 23) (Warren *et al.* 2009:27). The introduction of the new comprehensive post-natal care package

improved performance of health providers in maternal and newborn complications and infant feeding (Warren *et al.* 2009:29).

The strengths of the study were that it yielded prevalence of multiple predictors and outcomes (Hulley *et al.* 2007:120). Observation capture directly recorded behaviours and events (Polit & Beck 2004:321). However, the weaknesses of the study were the high possibility of distorted behaviour of the participants and the vulnerability to observer bias (Polit & Beck 2004:321). The sampling technique in the study ensured that participants with specific characteristics were selected. It enhanced representativeness in terms of near accuracy of the target respondents (William 2011:2).

The study findings enabled the researcher to compare the findings, as the researcher evaluated PNC rendered to HIV-positive mothers and their infants, after the introduction of the new PMTCT guidelines by the Ministry of Health (KoS, MoH 2010a:1-78). The findings relate directly to PNC in Swaziland. The key indicators for essential newborn care and the key counselling points on maternal health (Warren *et al.* 2009:27) helped the researcher to adjust questions regarding PNC services rendered to post-natal mothers in the questionnaire to capture comprehensive responses.

Warren *et al.* (2009:24) state that the post-natal period is neglected throughout Africa. The quality of PNC for those who seek such services is very poor and women and their infants are not encouraged to seek immediate PNC after delivery, whereas the post-natal period is a time of susceptibility to HIV.

Marazzi, Nielsen-Saines, Buonomo, Scarcella, Germano, Majid, Zimba, Ceffa and Palombi (2009:483) conducted a study on increased survival of infants with HIV type infection at one year of age in sub-Saharan Africa with mothers using highly active antiretroviral therapy during breast-feeding. This was a prospective observational cohort study. HIV-1-exposed infants of mothers receiving pre- and post-natal medical care were the study population. Their results showed that, of the 341 infants followed from birth, 92% mother–infant pairs completed 6 months and 83% completed 12 months of follow-up. There were 8 cases of HIV-1 transmission: 1.2% at 1 month,

0.6% at 6 months, and 0.7% at 12 months (cumulative rate: 2.8%). HIV risk reduction was 93% and HIV-free survival at 12 months was 94%. Late post-natal transmission of HIV-1 is significantly decreased by maternal use of highly active antiretroviral therapy (HAART) with high infant survival rates up to 12 months of age.

The strengths of the study were the control over participants' selection and measurement and avoidance of bias in measuring predictors (Hulley *et al.* 2007:120). Additionally, observational studies enhance direct recording of behaviours and events (Polit & Beck 2004:321) and the use of different study sites. On the other hand, the vulnerability of hasty decisions before adequate information is collected may result in erroneous classifications or conclusions (Polit & Beck 2004:321). These were the weakness of the study. The recommendation on breastfeeding and the use of ART motivated the researcher to investigate on ARV usage during the post-natal period as guided by the Ministry of Health (KoS, MoH 2010a:41). According to the Ministry of Health (KoS, MoH 2010a:45), dried blood spot (DBS) should be done first at six weeks for all HIV-exposed infants to determine their HIV status.

In a study by Manzi, Zachariah, Teck, Buhendwa, Kazima, Bakali, Firmenich and Humblet (2005:1242) on high acceptability of voluntary counselling and HIV testing they found unacceptable loss to follow-up in a PMTCT programme in rural Malawi. Scaling-up required a different way of acting to determine the acceptability of offering an opt-out out of voluntary counselling and HIV testing. They also investigated the progressive loss to follow-up of HIV-positive mothers during the antenatal period, at delivery and up to the six-month post-natal visit. The major weakness of the study was the use of one study site, whereas a combination of urban or peri-urban could have yielded better results.

Manzi *et al* (2005:1249) findings showed that 22% of the respondents were HIV-positive and that 45% mothers and 34% infants received NVP. The cumulative loss to follow-up was 55% at the 36-week antenatal visit, 68% at delivery, 70% at the first post-natal visit and 81% at the six-month post-natal visit. By then, only 19% were left in the programme. A total of 87% deliveries occurred at peripheral sites. According to

Manzi *et al.* (2005:1249), a different approach was to be used to scale up PMCT interventions.

These findings assisted the researcher to make recommendations on the PMTCT programme in Swaziland, which aimed at monitoring HIV-positive mothers and HIV-exposed infants in the PMTCT programme during the post-natal period and beyond the first 18 months of the children's life.

Tlebere, Jackson, Loveday, Matizirofa, Doherty, Mbombo, Wigton, Treger and Chopra (2007:342) conducted a study on community-based situation analysis of maternal and neonatal care in South Africa to explore factors that have an influence on the utilisation of maternal health services. Both quantitative and qualitative research methods were used. Quantitative statistics and qualitative thematic content were used to analyse data. The use of both research paradigms enhanced credibility of the study (Polit & Beck 2004:431). Data triangulation validated data by testing site consistency (Polit & Beck 2004:431).

The findings showed that transport and distance were the main challenges in accessing quality PNC. Barriers to utilisation and involvement of communities and families in MNCH care were to be investigated more (Tlebere *et al.* 2007:350). The inclusion of communication between postpartum mothers and midwives in the researcher's questionnaire was aimed at comparing the findings, and related demographic profile of respondents. Tlebere *et al.* (2007:348) state that HIV is a major issue, but basic and maternity and neonatal service quality cannot be overlooked, and families and communities are untapped resources for improving maternal and neonatal health.

Youngleson, Nkurunziza, Jennings, Arendse, Mate and Barker (2010:13891) studied improving a mother-to-child HIV transmission programme through health system redesign including quality improvement, protocol adjustment and resource addition in order to improve existing guidelines and protocols, and applied this to the patient population without exception or exclusion. A combination of approaches were used to strengthen health systems in order to reduce transmission of HIV from mother to infant in a multi-facility public health system in South Africa.

A run chart and Shewhart control chart analysis was used to analyse data. Results showed a decrease of HIV-exposed infants testing positive from 7.6% to 5%. PMTCT clients on HAART uptake increased from 10% to 25%, and post-natal HIV testing from 79% to 95% compared to baseline. System improvement methods, protocol changes and addition/reallocation of resources contributed to improved PMTCT processes and outcomes in a resource-constrained setting. The intervention requires a clear design, leadership buy-in, building local capacity to use systems improvement methods, and a reliable data system. A systems improvement approach offers a much-needed approach to rapidly improve under-performing PMTCT implementation programmes at scale in sub-Saharan Africa (Youngleson *et al* 2010:13891).

Youngleson *et al* (2010:13891) study was evaluated by the Office of Human Research Ethics of the University of North Carolina, and the nature of the intervention and the de-identified characteristics of the data were the strengths of the study. The use of one study site category, whereas diverse settings (private, mission, etc.) would have brought diverse data to make explicit recommendations and conclusions was a weakness. The use of de-identified data was replicated in the current study; moreover, the results provided a good base for comparison. As already stated in Chapter one, the Ministry of Health (KoS, MoH 2010a:1-78) in an effort to curb paediatric HIV infection, has adopted new PMTCT guidelines, which have been circulated in clinical settings (KoS, MoH 2010a:10). The outcome of quality PNC services to HIV-exposed babies has not yet been evaluated scientifically in Swaziland.

The findings and recommendations of the researchers enabled the researcher to engage in a study aimed at evaluating PNC rendered to HIV-positive mothers and their infants, because 57% of midwives were trained in PNC and MNCH post-natal services were feasible in Swaziland (Mazia *et al*. 2009:269).

## **2.15 BREASTFEEDING AND HIV TRANSMISSION**

Breastfeeding among HIV-positive mothers has a risk of transmitting HIV to the child. The Ministry of Health (KoS, MoH 2010a:10) states that breastfeeding has a 10–15%

transmission rate with an estimated annual number of infected infants in the absence of PMTCT services of 1 356–2 034 of 13 563 exposed children. The Ministry of Health (KoS, MoH 2010a:46) states that in Swaziland, exclusive breastfeeding is recommended for all infants for the first six months of life, because breast milk is healthy, acceptable and free and helps prevent diseases in the baby. For HIV-positive mothers who are breastfeeding, NVP prophylaxis is to be given to the baby during the entire breastfeeding period to reduce HIV transmission. Mixed feeding in the first six months of life should be avoided as it increases the chances of HIV transmission (KoS, MoH 2010a:46).

A prospective cohort study by Humphrey, Marinda, Mutasa, Moulton, Iliff, Ntozini, Chidawanyika, Nathoo, Tavengwa, Jenkins, Piwoz, Van de Perre and Ward (2010:65) investigated MTCT of HIV among Zimbabwean women who seroconverted after birth in order to estimate the rates and timing of MTCT of HIV associated with breast-feeding in these mothers compared to women who tested HIV-positive at delivery.

The sample size was 14 110 women and infants. Results showed that, among women who seroconverted after birth, 62% of transmissions occurred in the first three months after maternal infection, and breastfeeding-associated transmission was 4.6 times higher than in mothers who tested HIV-positive at baseline. Of their infants, 75% were infected or had died by 12 months. An estimated 18.6% to 20.4% of all breastfeeding-associated transmission observed in the study occurred among mothers who seroconverted post-natally (Humphrey *et al.* 2010:68).

According to Humphrey *et al.* (2010:69), breastfeeding-associated transmission was high during primary maternal HIV infection and was mirrored by a high but transient peak in breast-milk HIV load. Two-thirds of breastfeeding-associated transmission by women who seroconvert post-natally may occur while the mother is still in the “window period” of an antibody-based test.

The use of one study site category (urban) was a major weakness of the study. The factors that might have contributed to increased chances of post-natal transmission were least considered, like the use of safe sex practices, mixed feeding as this might

contribute to high maternal viral load and increased chances of MTCT of HIV (KoS, MoH 2010a:11). The discussion on the use of ARVs among HIV-positive women and HIV-exposed infants was minimal, whereas, it has been proved beyond reasonable doubt that the use of ARVs reduces the chances of MTCT of HIV (WHO 2009b:17).

Rotheram-Borus, Richter, Van Rooyen, Van Heerden, Tomlinson, Stein, RoCHAT, De Kadt, Mtungwa, Mkhize, Ndlovu, Ntombela, Comulada, Desmond and Greco (2011:2) state that PMTCT programmes are not designed to address the daily challenges faced by women living with HIV (WLH). Peer mentors could be useful in supporting WLH to cope with these challenges. The researcher realised that mentor mothers should be involved fully during provision of PNC, and HIV-positive post-natal women should be informed about psychosocial support they can receive from mentor mothers.

## **2.16 POLICY CHANGES IN PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV PROGRAMME**

The government of Swaziland has called for the virtual elimination of MTCT by the year 2015. As a result, new PMTCT guidelines have been adopted to assist health workers in making this goal achievable, ensuring that all pregnant and postpartum women access the full range of PMTCT services (KoS, MoH 2010a:10). Mirkuzie, Hinderaker and Mørkve (2010:2) conducted a retrospective study on promising outcomes of a national programme for the prevention of mother-to-child HIV transmission in Addis Ababa. Their purpose was to examine trends in PMTCT service utilisation and they assessed the rate of MTCT in relation to policy changes in the national PMTCT programme after the introduction of revised preventing mother-to-child transmission (PMCTC) guidelines.

They reviewed reports from February 2004 to August 2009 in 10 sub-cities. Results showed that 10.6% of the HIV-positive women completed their follow-up to infant HIV testing. The cumulative probability of HIV infection among babies on a single-dose Nevirapine regimen who were tested at >18 months was 15.0% in 2007,



whereas it was 8.2% among babies on a Zidovudine regimen who were tested at >45 days in 2009 (Mirkuzie *et al.* 2010:55). The study demonstrated trends in PMTCT service utilisation in relation to changing policy (Mirkuzie *et al.* 2010:60). There was marked improvement in HIV counselling and testing service utilisation, especially after the policy shift to routine opt-out testing (Mirkuzie *et al.* 2010:63). However, despite policy changes, the ARV prophylaxis uptake, the loss to follow-up and partner testing have remained unchanged over the years, and this should be a matter of immediate concern and a topic for further research (Mirkuzie *et al.* 2010:65).

Strengths of the study were that it captured all the key PMTCT indicators used to measure the effectiveness of the programme, and that it was done in a variety of study sites. The researcher captured these indicators so that comparison of findings could be possible, as the researcher was evaluating post-natal care rendered to HIV-positive women and their infants, after the introduction of new PMCT guidelines.

## **2.17 MIDWIFERY EDUCATION**

Worldwide, midwifery education and practice are under the direct guidance of the ICM and the WHO, who set the standards for midwifery education, practice and guidance (KoS, MoH 2011c:7). Competency-based midwifery education can make a significant contribution towards reduction of maternal and newborn morbidity and mortality by producing a midwifery workforce with knowledge and skills (ICM 2011:2).

Competencies for basic midwifery practice as stated by the ICM (2011:1–18) include requisite knowledge and skills regarding obstetrics, neonatology, social science, and ethics, which form the basis of high-quality, culturally relevant and appropriate care for women, newborns and childbearing families. This provides high-quality culturally sensitive health education and services to all in the community in order to promote healthy family life, planned pregnancies and positive parenting. The provision of high-quality antenatal care can maximise health during pregnancy, including early

detection and treatment or referral of selected complications, and provision of high-quality, culturally sensitive care during labour.

Furthermore, it can help to conduct a clean and safe birth and handle selected emergency situations to maximise the health of women and their newborns. Moreover, it also includes provision of comprehensive, high-quality, culturally sensitive postpartum care for women, provision of high-quality, comprehensive care for the essentially healthy infant from birth to two months of age, and the provision of a range of individualised, culturally sensitive abortion-related care services for women requiring or experiencing pregnancy termination or loss that is congruent with applicable laws and regulations and in accord with national protocols (ICM 2011:18).

Roets, Martheze, Nel, Van der Vyver and Wilke (2003:12) conducted a descriptive research study on the prevention of intrapartum HIV/AIDS transmission from mother to child, to determine which preventive practices registered midwives in provincial labour wards in Bloemfontein were implementing to lower the risk of mother-to-child transmission of HIV/AIDS and in doing so to lower child mortality. The target group were fifty-one midwives, who were requested to complete questionnaires to determine which preventive practices they used.

The study showed that most of the midwives did not implement the interventions that could lower the chances of HIV transmission from mother to child (Roets *et al.* 2003:18). The researchers concluded that midwives do not implement the interventions mentioned in the study because of lack of knowledge and skills. This lack of knowledge could be attributed to a lack of pre-service, in-service training and a policy guide to this regard. It was remarked that there is need for strengthening pre-service and in-service training (Roets *et al.* 2003:19). A limitation to this study was self-evaluation of midwives which may have introduced bias on the results. On the other hand, using midwives might have been a strength because a true picture on the interventions could be portrayed.

The University of Swaziland and the Southern African Nazarene University are the only two established national institutions of higher learning for nurses and midwives

in Swaziland (KoS, MoH 2011c:24). According to the Swaziland Ministry of Health (KoS, MoH 2011c:24), midwifery education is severely challenged in Swaziland. The challenges include a shortage of midwifery teachers, practice laboratory equipment and space and teaching–learning materials, a lack of clinical mentorship or preceptorship for guided clinical practice, large turnover of students limiting clinical supervised time for competency development, and a lack of capacity in clinical practice among graduates. In addition, inadequate resources for maternity services and student clinical practice, curricula that are not in line with the WHO and the ICM’s essential competencies for basic midwifery practice, and limited supervised student clinical practice act as a barrier to student competency development.

## **2.18 HIV TESTING**

According to the Ministry of Health (KoS, MoH 2010a:16), provider-initiated HIV testing and counselling using rapid tests is recommended as part of the standard package of care. Midwives should provide information and support to all women coming for MNCH services on the importance of knowing their HIV status.

Thior, Gabaitiri, Grimes, Shapiro, Lockman, Kim, Kebaabetswe, Garmey, Montano, Peter, Chang, Marlink and Essex (2007:296–302) conducted a study on voluntary counselling and testing among postpartum women in Botswana to determine uptake and socio-demographics predictors of acceptance of voluntary counselling and testing (VCT) among postpartum women. A standardised questionnaire was used to collect socio-demographic characteristics and reasons for declining VCT among women attending maternal and child health clinics for their first postpartum or well-baby visit in three sites in Botswana. These women were offered VCT after written informed consent (Thior *et al.* 2007:298). A sample size of 1 735 postpartum women was approached and data was analysed through multiple logistic regression analysis. Results showed that 54% accepted VCT and that 30% of women who accepted VCT were HIV-positive. Younger maternal age, not being married, and less formal education were significant predictors of acceptance of VCT (Thior *et al.* 2007:299).

According to Thior *et al.* (2007:305), prior to the initiation of a government mother-to-child transmission (MTCT) prevention programme, younger, unmarried and less educated postpartum women were likely to undergo VCT. The results have shown that interventions to improve VCT among postpartum women and more generally among women of reproductive age are warranted in Botswana. These interventions should consider the differences such as age, marital status, education, and partner involvement to maximise VCT uptake (Thior *et al.* 2007:306).

The socio-demographic trends observed in this study enabled the researcher to expand and include these predictors, so that a more comprehensive set of predictors could be understood on health-seeking behaviour among HIV-positive mothers attending PNC. It will also provide a good baseline to compare findings on these predictors.

Cohen, Olszewski, Webber, Blaney, Garcia, Maupin, Nesheim, Agniel, Danner, Lampe and Bulterys (2007:568) studied women identified with HIV at labour and delivery in terms of testing, disclosing and linking to care challenges, to determine if women with undocumented HIV status in late pregnancy or at labour had high-risk behaviours and psychosocial obstacles hindering postpartum follow-up. The target population was women in 6 cities with undocumented HIV status and  $\geq 24$  weeks gestational age and imminent delivery or  $\geq 34$  weeks gestational age (Cohen *et al.* 2007:569). HIV-positive women were offered follow-up. Of the women, 54 HIV-infected women were identified, with a median age of 26 years.

The results showed that 20% lost custody of their infants, 56% knew they or their partners were HIV-infected, and 25% met criteria for starting antiretroviral therapy. HIV-infected women were likely to report no prenatal care and to use street medication, had unstable residency, were not living with the fathers of their infants, and had children in foster care. Of the infants, 31% did not remain in the follow-up study due to relocation, child protective custody, and psychosocial issues including frequent substance use. Over half of the HIV-infected women knew they or their partners were infected with HIV, but did not initially disclose their status (Cohen *et al.* 2007:575). Increased support services and substance abuse treatment are critical to facilitate better PNC for these socially marginalised women (Cohen *et al.* 2007:576).

The use of more than one study site was the strength of the study, and the inclusion of socio-economic indicators resulted in collection of a comprehensive data, laying a good foundation for recommendations and conclusions to be reached for the current study. The major weakness was the sample size; it was just too small for generalisation purposes.

## **2.19 SOCIO-CULTURAL ISSUES RELATED TO HIV-POSITIVE MOTHERS**

Sanders (2008:47–57) conducted a qualitative study on women's voices. The purpose of the study was to investigate the lived experience of pregnancy and motherhood after diagnosis with HIV and to explore the meaning of pregnancy after diagnosis with HIV. Purposive sampling was used to come up with 9 participants of 34 to 53 years old, who had been diagnosed with HIV and who were currently pregnant or who had become mothers after diagnosis (Sanders 2008:49). Data was analysed through qualitative analysis (Sanders 2008:53).

The results showed extreme emotional distress after HIV diagnosis, feelings of being stigmatised, emotions related to the pregnancy and baby, experiences with healthcare providers, and prospects of motherhood for women with a diagnosis of HIV (Sanders 2008:54). The experience of pregnant women with HIV is one fraught with isolation, anxiety and distrust, but it is also one of hope for the normalcy that motherhood may bring (Sanders 2008:56). Further research is needed to determine best practice for care delivery as women with HIV enter the healthcare system (Sanders 2008:57).

The sample size was very small, only 9 respondents were obtained; generalisation was therefore not possible (Polit & Beck 2004:719). The recommendation may be relevant to post-natal women in Swaziland, especially after the introduction of the new PMTCT guidelines. These women have to take ARVs, sometimes for life, undergo several laboratory tests and administer NVP daily to their infants (KoS, MoH 2010a:31).

Phaswana and NancyKayongo (2008:63) report that the quality of the PMTCT programme and its ability to comply with required feeding practices were

compromised by various factors. These included improper conduct of some nurses, technical care sometimes not given (e.g. patients not examined), inadequate supplies, poor healthcare organisation, and inaccessible healthcare facilities with limited space as well as waiting times that are too long. The researcher developed a comprehensive questionnaire, to include the above mentioned components, to effectively evaluate the quality of PNC rendered by midwives to HIV positive mothers and their HIV exposed infants.

Xue, Mhango, Hoffman, Mofolo, Kamanga, Campbell, Allgood, Cohen, Martinson, Miller and Hosseinipour (2010:1156) evaluated a pilot prevention of mother-to-child transmission post-natal programme in Lilongwe, Malawi, through observed retention. Free fortified porridge and water hygiene packages were offered to mothers to encourage frequent post-natal visits and to reduce diarrhoeal rates in infants on replacement feeding.

Results showed that 75.3% completed 3-month follow-up visits. Only 17.7% of the infants had diarrhoea at least once over the 3-month period. The majority of participants adhered to their post-natal scheduled visits and retention was favourable, possibly because of the introduction of hygiene and nutrition incentives. The infant diarrhoeal rate was low, suggesting benefits of regular medical care with hygiene package usage and reliable replacement feeding options (Xue *et al.* 2010:1159). Continuation and expansion of the programme would allow further studies and improve the post-natal care of HIV-exposed infants in resource-constrained countries (Xue *et al.* 2010:1161).

## **2.20 INTEGRATION OF POST-NATAL CARE IN PREVENTION OF MOTHER TO CHILD TRANSMISSION PROGRAMME**

The WHO (2010b:7) states that the post-natal period poses substantial health risks for both the mother and her infant, yet the post-natal period receives less attention from midwives than pregnancy and childbirth. Moreover, models of PNC have changed little since first developed a century ago.

Mazia *et al.* (2009:253) conducted a study on integrating quality PNC in the PMTCT programme to investigate the quality of PNC for women and their infants. They conducted a direct observation of client–provider interaction. The strength of the study was the use of the data collection approach which captured behaviours or events directly (Polit & Beck 2004:321).

The major weakness of the study was the vulnerability to observer bias (Polit & Beck 2004:321). The target population was postpartum women and health providers. The evaluation process showed a 20-fold increase in the number of visits coming for early post-natal visits (within the first three days after birth). A significant increase in the competence of health workers related to post-natal examinations, and care of mothers and babies was observed. The percentage of women breastfeeding within one hour of delivery increased by 41% in HIV-positive mothers, while co-trimoxazole prophylaxis for HIV-exposed infants increased by 24%.

The need for additional strategies for promoting healthy behaviours was recommended. High-quality integrated PMTCT programmes and MNCH post-natal services are feasible and acceptable, and can result in promoting early post-natal visits and improved care of HIV-positive mothers and their babies. The findings and recommendations of the researchers enabled the researcher to gain more confidence that evaluation of PNC rendered to HIV-positive mothers and their infants had a base, because 57% of midwives were trained on PNC and MNH post-natal services are feasible in Swaziland (Mazia *et al.* 2009:269). The discussed findings also helped the researcher to compare findings.

## **2.21 CONCLUSION**

The literature review provided insight to the researcher, as more post-natal information that other researchers have recommended to be explored was included in the data collecting tool. This enabled the researcher to evaluate post-natal care rendered to HIV-positive mothers and their infants comprehensively. The findings of the current study had to be scientifically evaluated in light of the studies that had been conducted, as comparison of findings would enhance credibility among scholars (Joubert & Ehrlich 2010:67).

The review revealed that midwives are an asset for quality PNC in Swaziland, in order for PNC to be rendered. Essential medical supplies and pharmaceutical material should be available and good human resource management is a crucial aspect of proper MNCH care service provision. Researchers recommended that the quality of PNC is to be explored further. The use of ARV and provision of quality PNC are relevant approaches in reducing the maternal mortality rate and infant mortality rate, especially among HIV-positive mothers and their HIV-exposed infants. Delaying PNC may lead to preventable morbidity and mortality (KoS, MoH 2010c:28).

The questionnaire used in the current study was developed on the basis of the literature review and questions from previous studies were adopted. This produced data pertaining to post-natal care rendered to HIV-positive women and their HIV-exposed infants.

Chapter 3 will discuss the methodology used in this research study on the evaluation of PNC rendered to HIV-positive mothers and their HIV-exposed infants.



## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter discusses the research methodology, including the research design, the setting, the population and sampling framework, data collection and analysis, measures to ensure reliability and validity, and ethical considerations.

Gillis and Jackson (2002:708) stated that a methodology is a plan for conducting a study. It involves a series of steps, including selection of a research design, identification of the study population and selection of the sample, implementation of a pre-test, collection and analysis of the data (Creswell 2009:147). The methodology for this study was based on the care provided to HIV-positive women and their infants during post-natal care.

#### **3.2 RESEARCH APPROACH AND DESIGN**

The study comprised a quantitative, descriptive, cross-sectional and analytic study, which investigated PNC services to HIV-positive mothers. A research design is similar to a blue print for a study; it guides the investigator in planning and implementing a study (Gillis & Jackson 2002:713). Quantitative research is research that uses numerical analysis. In essence, this approach reduces the data to numbers, such as per cent (Polit & Beck 2004:729).

Quantitative research is generally done using scientific methods, which include the following steps: developing models, theories and hypotheses of what the researcher expects to find, developing instruments and methods for measuring the data, experimental control and manipulation of variables, collecting the data, modelling and analysing the data, and evaluating the results (Babbie & Mouton 2011:49–53). This approach involves the use of questionnaires as data collecting tools (Hulley *et al.* 2007:111). The researcher used these steps in evaluating the PNC rendered to HIV-positive women and their HIV-exposed infants.

### 3.2.1 Quantitative approach

Quantitative research is the scientific investigation of a phenomenon to quantify or to reflect with numbers (Gillis & Jackson 2002:712). Quantitative approach was ideal for the current topic in order to demonstrate variables related to the quality of PNC (Joubert & Ehrlich 2010:78). Numerical data was manipulated through statistical procedures for the purposes of describing PNC and assessing the quality of services rendered to HIV-positive mothers and their infants (Polit & Beck 2008:763). The collection and analysis of the data in this study were guided by this paradigm.

The limitations of a quantitative approach are its inability to capture emotions, feelings, insights, motives, intents, views and opinions of the subject are not taken into account. Only the outward behaviour is seen, leaving a huge lacuna, especially in human behavioural studies (Hulley *et al.* 2007:123). The questionnaires should be very carefully constructed and worded without any redundancy or double-barrelness but with clarity and directness, which becomes lengthy and laborious (Hulley *et al.* 2007:123). The advantage of quantitative designs is that the researcher can use a large sample size to ensure that the answers are statistically robust (Polit & Beck 2004:121).

### 3.2.2 Cross-sectional

Hulley *et al.* (2007:109) state that the cross-sectional design is the scientific study in which data is collected at one point in time, with no follow-up period, suited for the goal of describing situations. The cross-sectional design was appropriate for describing the quality of PNC rendered to HIV-positive mothers and their HIV-exposed infants, and identifying gaps in the provision of quality PNC (Polit & Beck 2004:166). This design benefitted the researcher because it is practical and relatively economical and easy to manage, as data is collected at one point and requires no follow-up.

### **3.2.3 Descriptive**

The study took the form of a quantitative descriptive non-experimental study. Polit and Beck (2004:716) define quantitative descriptive design as research studies that have as their main objective the accurate portrayal of the characteristics of persons, situations or groups and/or the frequency with which certain phenomena occur. Non-experimental research refers to a study in which the researcher collects data without introducing an intervention (Polit & Beck 2004:725). Will (2008:2) states that, in quantitative descriptive design, the researcher only collects data to give a clear picture of the situation. In this study, the researcher aimed to collect data to evaluate PNC services that were provided to HIV-positive mothers and their infants during the postpartum period and to identify gaps in the delivery of quality PNC.

### **3.2.3 Analytical**

Analytical studies reveal and evaluate the gap between what is and what should be (Joubert & Ehrlich 2010:62). It was very relevant to this study on the evaluation of PNC rendered to HIV-positive mothers and their infants, as the researcher wanted to evaluate PNC services provided to HIV-positive mothers during the first 6 weeks postpartum, to assess care rendered to HIV-exposed infants and to identify gaps in the delivery of quality PNC in light of the Ministry of Health guidelines.

## **3.3. SAMPLING**

### **3.3.1 Target population**

HIV-positive mothers including their infants, who were within the postpartum period (0 to 6 weeks) and who attended PNC services, and one senior midwife at each of the study sites comprised the target population. A target population is selected on the basis that they would yield the required data (Hulley *et al.* 2007:82). The respondents were selected from mothers who had come for their 6-week post-natal visit. The researcher checked the antenatal card as well as the child's health card to ascertain the HIV status of the mothers and the HIV exposure status of the infants.

The identified mothers (those who were HIV-positive) were selected. They were told about the study and their consent, both verbal and written, was sought.

### 3.3.2 Sampling method

Polit and Beck (2008:765) state that sampling refers to the researcher's process of selecting the sample from a population in order to obtain information regarding a phenomenon, in a way that represents the population of interest. A sample is a subset of the whole population, selected by the researcher to participate in a research study. The sampling approach selected for the study was a non-probability purposive sampling. Purposive sampling is non-random sampling in which the selection is based on the researcher's expertise about the target population of the study (O'Neil 2006:1).

The researcher purposefully selected HIV-positive mothers and their infants, who were within the postpartum period who attended PNC services. This was done through the midwives working in PNC units. Professionals who knew the respondents were used for this purpose, because this facilitated positive response and quality information from respondents. In contrast, their interpersonal factors interfered with data collection as respondents were reluctant about the confidentiality of the responses (Joubert & Ehrlich 2010:108).

### 3.3.3 Sample size

Sample size refers to the number of subjects in a sample (Hulley *et al.* 2007:32). For a researcher to generalise from the sample to the population, the sample has to be representative of the population (Joubert & Ehrlich 2010:103). The study population comprised HIV-positive mother–infant pairs attending child welfare clinics (CWCs) for their 6-week visits. The minimum sample size ( $n$ ) was therefore calculated using formula for descriptive statistics (Creswell 2009:152) as follows:

$$n = [z^2 (p) (1 - p)] / d^2 \text{ where:}$$

$Z$  = z-value (1.96 for a 95% confidence level)

$p$  = HIV prevalence in target population = 0.41

$d = \text{confidence interval or precision} = 0.05$

$n = [(1.96 \times 1.96) \times 0.41 \times (1 - 0.41)] / (0.05 \times 0.05)$

$n = 3.84 \times 0.41 \times 0.59 / 0.0025 = 372 \text{ mother–infant pair}$

The sample was proportionately distributed among the 9 study sites based on the number of mother–infant pair seen over 3 months,

Table 3.1 Sample proportionate to size of each study site

<b>Study site</b>	<b>Total number of HIV positive mother–infant pairs seen at first CWC visit, Jan–Mar. 2011 (KoS, MoH HMIS 2011b:33)</b>	<b>Sample proportionate to size</b>
Mbabane PHU	244	88
KSII PHU	224	81
RFM Hospital (MCH)	189	68
Good Shepherd PHU	89	32
Dvokolwako PHU	73	27
Nhlangano PHU	72	26
Siteki PHU	69	25
Hlathikulu PHU	36	13
Pigg's Peak PHU	33	12
<b>TOTAL</b>	<b>1 029</b>	<b>372</b>

The sample comprised 372 HIV-positive mothers, who had attended their second PNC visit (6 weeks after birth), as the researcher had focused on the quality of PNC rendered to HIV-positive mothers and their infants from 0 days to 6 weeks, and 9 senior midwives (1 per healthcare facility) at the selected public health units (PHUs) and mission hospitals. The post-natal period from birth to six weeks is the most

vulnerable time for the health of the mother and the infant (Warren *et al.* 2008:7). The PHUs provide services to maternal and child health clients, and services are rendered free of charge (KoS, Ministry of health and social welfare (MHSW) 2006:33).

These included Siteki PHU, Dvokolwako PHU, Mbabane PHU, King Sobhuza II PHU, Hlathikulu PHU, Nhlangano PHU, Pigg's Peak PHU and two missionary hospitals, Good Shepherd PHU and Raleigh Fitkin Memorial Hospital (RFMH) Maternal and Child Health Department. Good Shepherd Hospital is the regional hospital for Lubombo region and a mission hospital. This helped the researcher to compare services with those at public facilities. RFMH is central and closer to the industrial site, and also a mission hospital. These mission hospitals are supported by government in terms of subvention for providing care to HIV-positive mothers and HIV-exposed infants, as indicated in the guidelines of the Ministry of Health regarding PMTCT (KoS, MoH 2010a:39-58).

### **3.4 DATA COLLECTION**

Leedy and Ormrod (2010:33) state that the researcher should aim to collect data timely without jeopardising the accuracy and validity of the research at hand. This will minimise any inconvenience to the respondents during the data collection phase. The data collection procedure is discussed in the next sections.

#### **3.4.1 Data collection approach**

A descriptive non-experimental cross-sectional approach was used as advised by Hulley *et al.* (2007:109). The advantage of using this approach is that it yields data that is relatively easy to analyse (Gillis & Jackson 2002:303). The disadvantage of this method is that it often takes considerable effort to develop and refine the data collecting tool (Polit & Beck 2004:318). The researcher aimed to limit the disadvantages by developing the tool in advance, giving it to the supervisor for input and to a professional statistician to establish its sufficiency in seeking the proper range of responses.

### **3.4.2 Data collection method**

A triangulation method was used. Triangulation is the use of multiple methods to collect data about a phenomenon so as to accurately portray the reality (Polit & Beck 2008:768). The benefits of triangulation are convergence of truth and deeper understanding of the phenomenon under investigation, the emergence of overlapping and different facets of a phenomenon, increased credibility and validity of results and the contribution of new dimensions, contradictions and fresh perspectives that may lead to new research questions and significant areas of inquiry (Gillis & Jackson 2002:31). The disadvantage of this method is that it is expensive and time-consuming (Gillis & Jackson 2002:31).

The researcher developed a checklist to verify PNC services rendered to HIV-positive women and their HIV-exposed infants from the PNC register, the antenatal card and the child health card. Essential medication and equipment were checked using a checklist. A face-to-face structured questionnaire was conducted by the researcher and the researcher's assistants under the close supervision of the researcher. At six of the study sites, where a larger number of respondents were required, the services of research assistants were engaged. They were first trained by the researcher, and for three days each one of them collected data in the presence of the researcher. Each questionnaire was checked by the researcher for completion and accuracy (Makumbe 2001:61). At the other three health facilities, the researcher collected the data.

#### **3.4.2.1 Data collecting tool**

A structured interview guide was used as the data collecting tool for this study. Responses were clearly documented on the question guide by the researcher or research assistants under the supervision of the researcher.

The questionnaire was structured as follows:

Section contained demographic information about the respondents, which included age, marital status, level of education, occupation, residential area, place of childbirth and the person who conducted the delivery.

Section B summarised the PNC provided to the HIV-positive mother during the post-natal period. This included immediate PNC services, immediate PNC information given, PNC services rendered at discharge as well as information shared at discharge. Moreover, it included medication and equipment supplied; as well as PNC services and information provided at 3–14 days and at the 6-week visit.

Section C summarised the PNC services rendered to HIV-exposed infants immediately after birth and at discharge, within 3–14 days and at the 6-week PNC visit.

Section D addressed human resources (midwives, etc.), material resources (medical supplies) and organisational resources (supervision). These resources were deemed necessary to offer basic PNC care. Senior midwives at each of the selected study settings were interviewed.

Section E was a checklist to investigate essential medication, supplies and equipment.

#### **3.4.2.2 Pretesting**

Researchers who develop a new instrument in methodological studies almost invariably subject it to pretesting so that it can be evaluated and refined (Hulley *et al.* 2007:276). A pre-test was conducted to evaluate if the data collection tool addressed the objectives of the study. This was done at Lobamba clinic with ten post-natal mothers and one senior nurse. The setting of the clinic is the same as that of the public health units, where the study was conducted. The instrument was adjusted to yield the data that fulfilled the objectives of the study, before being utilised in the actual study (Gillis & Jackson 2002:467).

#### **3.4.2.3 Data management and analysis techniques**

After the questionnaires had been completed, they were checked for completion, and after that, they were locked away safely in the EGPAF strong room until they were given to the statistician for analysis (Coughlin *et al.* 2009:85).



In this study, the data was analysed using descriptive statistical strategies. Creswell (2009:152) is of the view that descriptive statistics are used to describe and summarise data. It employs measures such as frequency distributions, and variability and measures of relationship. The Epi info version 3.5.2 software was used for data entering and analysis in this study. This information was verified by a statistician and the research supervisor.

### **3.5 VALIDITY AND RELIABILITY**

#### **3.5.1 Reliability**

According to Joubert and Ehrlich (2010:117), reliability means the degree of consistency or accuracy with which an instrument measures the attribute it is designed to measure. Reliability of the tool in the study was ensured by accurate and careful phrasing of each question to avoid ambiguity and to lead respondents to a particular answer. Respondents were informed of the purpose of the interview and the need to respond truthfully. In addition, a pretest of the data collecting tool was conducted to identify any problems (Makumbe 2001:39). Frequencies were used for data cleaning as well as creation of reliability scales in this research study (Makumbe 2001:61).

#### **3.5.2 Validity**

Validity refers to the degree to which an instrument measures what it is supposed to measure (Polit & Beck 2008:768). It refers to the accuracy and truthfulness of the findings (Brink *et al.* 2006:118). There are four types of validity: external, internal, content and face validity.

##### **3.5.2.1 External validity**

External validity refers to the generalisability of the research findings to other settings. A study is externally valid if the sample is representative of the broader population (Polit & Beck 2004:216). The sample size for this study was calculated using the formula for descriptive statistics ( $n = \frac{z^2 (p) (1 - p)}{d^2}$ ) and the sample was

proportionately distributed among the study sites based on number of mother-infant pair seen over 3 months.

### **3.5.2.2 Internal validity**

Internal validity is defined by Gillis and Jackson (2002:707) as the extent to which it is possible to state that the independent variable is influencing the dependent variable, and that the relationship between the two is not the spurious effect of an extraneous variable. The supervisor of this study with research experience as well as the professional statistician assisted the researcher in formulating the questionnaires to ensure internal validity (Nxumalo 2011:77).

### **3.5.2.3 Content validity**

Content validity refers to the degree to which the instrument has an adequate sample of items for the construct being measured (Madisha 2008:58). A panel of experts should be used to evaluate and document the content validity of new instruments, also looking at item relevance (Hulley *et al.* 2007:43). Face validity considers the extent to which the instrument looks as though it measures the appropriate construct. It forms a subjective impression of whether the instrument appears to measure what it is supposed to measure (Polit & Beck 2004:423).

The content validity method was utilised in this study, because questionnaires focus on content validity, which refers to the accuracy with which an instrument measures what it is supposed to measure (Hulley *et al.* 2007:251), in this case, PNC services rendered to HIV-positive mothers and their HIV-exposed infants. Therefore, content validity concerned how accurately the questions were asked to elicit the information sought (Hulley *et al.* 2007:251). The data collecting tool was tested for content validity by giving the questionnaire to midwives at Lobamba clinic.

### **3.5.2.4 Face validity**

Polit and Beck (2004:718) define face validity as the extent to which a research instrument looks as though it is measuring what it purports to measure. The measurement of face validity of the tool was done by giving it to the supervisor for acceptance and to a professional statistician to establish whether the tool was sufficiently comprehensive in seeking the proper range of responses. In this study, the quality of PNC was measured by the manner in which PNC services were offered to HIV-positive mothers and their HIV-exposed infants by midwives in light of the recommendations in the guidelines of the Ministry of Health.

### **3.5.2.5 Construct validity**

According to Polit and Beck (2008:750), construct validity refers to the inferences from observed persons, settings and interventions in a study to the constructs that these instances might represent with an instrument, and the degree to which an instrument measures the construct under investigation. Construct validity was applied through conducting literature review on PNC in order to ensure that all the different aspects were covered in the questionnaire. Both the supervisor and statistician of this study assisted the researcher in formulating the questionnaires and it was given to an independent expert to check for conceptual and investigative bias (Nxumalo 2011:77).

## **3.6 ETHICAL CONSIDERATION**

The researcher understood that when humans are to be used as study participants, care must be exercised that the rights of the participants or respondents are protected. The researcher was guided by and adhered to the appropriate code of ethics, especially because the respondents of the proposed study were HIV-positive humans. The necessary consent was obtained from the Ministry of Health in Swaziland, the Regional Public Health Unit matrons, senior management at the study settings, the Swaziland Research Committee and the participants who took part in the study, whose consent was sought verbally before each interview.

Ethical principles should be followed when researching issues involving humans as research subjects (Babbie & Mouton 2011:528). This section examines ethical issues raised in the study, which included autonomy, confidentiality and anonymity, informed consent, non-maleficence, beneficence, privacy and some other general ethical principles to be followed when studying humans.

### **3.6.1 Autonomy**

The principle of autonomy means that research participants are to be provided with sufficient information before they can decide to be part of the study (Coughlin *et al.* 2009:26). The researcher respected the autonomy, rights and dignity of the research participants at all times during the course of the research. Participants were informed that they had the rights to choose to participate or not in the research. Their decision was made without coercion. Study subjects were allowed to act independently and could freely choose to participate. The purpose of the study was fully explained to them in SiSwati, as the study participants were Swazis. Risks and benefits were highlighted as advised by Coughlin *et al.* (2009:26).

### **3.6.2 Beneficence**

Hulley *et al.* (2007:225) state that participants have to be protected from harm. The researcher strived to minimise all types of discomforts and to achieve insofar as possible a balance between the potential benefits and risks of being a participant. Study participants were not exposed to experiences that resulted in serious or permanent discomforts, including emotional and psychological discomforts.

### **3.6.3 Nonmaleficence**

This principle refers to or requires that the researcher should not harm participants (Joubert & Ehrlich 2010:33). The researcher did not cause harm to the research participants in particular or to people in general. Since the study involved HIV-positive clients, the researcher ensured that respondents were protected in any aspects of life: physical, mental, socially and spiritual, as they were interviewed

within the agreed time. Moreover, a high level of privacy and confidentiality was maintained as will be discussed.

#### **3.6.4 Justice**

Justices refers to fair treatment of participants (Coughlin *et al.* 2009:117). The purpose, benefits and risks of the research were fully discussed. Participants were given the option to withdraw from the research if they so wish, without any negative consequences regarding health services.

#### **3.6.5 The quality of the researcher**

The researcher upheld ethical standards of research planning, implementation and reporting, because this was a research study that involved HIV-positive people (Coughlin *et al.* 2009:118). The research was conducted in honesty and with respect for the rights and privileges of HIV-positive clients. It was also done without any misconduct, fraud or acts of bad faith at any stage in the process. In the report, all findings were reported fully without omitting significant data and making explicit mention of methods and research designs or theories which could influence the interpretation of data. Participants were credited by acknowledging them in written and verbal reports, and funding sources and sponsorship of the research were fully disclosed.

#### **3.6.6 Confidentiality and anonymity**

Confidentiality is a basic ethical principle; while anonymity is one way in which confidentiality is maintained (Joubert & Ehrlich 2010:231). Confidentiality and anonymity were ensured and participants were protected in the report by making it impossible to link specific data to a specific participant. The researcher was accountable for this aspect of the research. The issue of confidentiality was very important in this research because the research dealt with a very sensitive issue, which could give rise to a lot of prejudice and discrimination. Many people who participated might thus not have been willing to give enough information because of the sensitivity of their HIV status. Therefore, in this study, anonymity was achieved

by not putting names on the questionnaires, but instead code numbers were used. At the end, not even the researcher could link any information to any subject. The report was presented statistically so that no link could be made between the report and individual who had responded (Hulley *et al.* 2007:231).

### **3.6.7 Privacy**

This means that a participant may behave and think without interference or the possibility that private behaviour or thoughts could be used to embarrass or demean the participant later (Coughlin *et al.* 2009:85). In this study, the researcher did not collect more data (especial data of a private nature) than was absolutely necessary to reach the objectives of the study. The researcher took measures to ensure and maintain the worth and dignity of the individuals. The interviews were conducted in a private closed room where no third person could tape the conversation and the information was locked away from other authorities (Makumbe 2001:42).

### **3.6.8 Informed consent**

Informed consent is a legal requirement before one can participate in a study (Hulley *et al.* 2007:228). The nature of the study was fully explained to the respondents in a language that they understood. The choice to participate was sought. If participants gave verbal and written consent it showed their willingness to participate in the study.

### **3.6.9 Bias**

Polit and Beck (2012:720) define bias as any influence that distorts the results of a study and undermines validity. In efforts to minimize biasness in this study, the researcher clearly identified and selected study subjects, clearly defined study population in time and place used sampling techniques that result in choosing groups from the same population use methods that result in high recruitment rates.

### **3.6.10 General ethics principles**

UNISA (2007:1–8) provided the following ten general ethics principles which were adhered to by the researcher. The researcher balanced the demands made by moral principles of research and the possibility of privileging one principle over another, depending on the context and circumstances where the researcher would be involved.

#### **3.6.10.1 Essentiality and relevance**

The researcher considered existing literature on the subject. The researcher also acknowledged that relevant studies have been conducted globally, in Africa and in Swaziland.

#### **3.6.10.2 Maximisation of public interest and of social justice**

The research study was carried out for the benefit of society, and with the motive of maximising maternal and infants' survival and quality PNC provided to HIV-positive mothers and their HIV-exposed infants.

#### **3.6.10.3 Competency, ability and commitment to research**

The information and knowledge that the researcher had acquired through studying the research module made him to consider himself a capable researcher to conduct such a study. The information and knowledge have made the researcher to be professionally and personally qualified for the research.

#### **3.6.10.4 Respect for and protection of participants' rights**

The researcher respected and protected the dignity, privacy and confidentiality of participants and never exposed them to procedures or risks not directly related to the research project or its methodology.

### **3.6.10.5 Informed and non-coerced consent**

The researcher adhered to autonomy as this required that individuals' participation should be freely given, specific and based on informed consent (Joubert & Ehrlich 2010:35). The researcher did not directly or indirectly practiced coercion, and undue inducement of people in the name of research was avoided.

### **3.6.10.6 Respect for cultural differences**

The researcher treated research participants as unique human beings within the context of their community systems, and respected what was sacred and secret by tradition. The participants' names were not used but codes were used instead.

### **3.6.10.7 Justice, fairness and objectivity**

Criteria for the selection of participants of research were fair, besides being scientific. A sampling procedure was followed to select participants.

### **3.6.10.8 Integrity, transparency and accountability**

The conduct of the researcher was honest, fair and transparent. The researcher was honest about the limitations of the study and his own limitations, competence, belief systems, values and needs. Moreover, the researcher did not abuse his position or knowledge for personal power or gain.

### **3.6.10.9 Risk minimisation**

The researcher ensured that the actual benefits to be derived by the participants and the public health units' management and staff from the research clearly outweighed possible risks, and that participants were not subjected to any unnecessary risks. The researcher assessed risks and adequate precautions were taken to minimise and mitigate risks.



### **3.6.10.10 Non-exploitation**

The researcher ensured that there was no exploitation of research participants as far as possible. Participants, public health units' staff and management will receive feedback on research involving them and taking place on their premises.

### **3.6.11 Termination**

The research was to be terminated if:

- an individual wished to withdraw, notwithstanding initially giving consent and
- the study no longer adhered to standards set in planning.

### **3.6.12 Dissemination of findings**

A written report about the study was compiled following the research. Briefing about the results was done at the offices of the Swaziland Ministry of Health. Compiled research reports were distributed to all involved research settings, so that research participants may have access to it.

## **3.7 SCOPE AND LIMITATIONS**

Burns and Grove (2005:39) state that limitations of a study may decrease the generalisability of the findings. The two types of limitation are theoretical and methodological. Theoretical limitations restrict abstract generalisability or transferability of findings. Methodological limitations restrict the population to which findings can be generalised or transferred (Burns & Grove 2005:40). In this study, the respondents were obtained at only a few selected health facilities (only 9 facilities) and PNC departments and were limited to these areas, thus limiting transferability and generalisability of the findings nationally.

### **3.8 CONCLUSION**

This chapter discussed the methodology followed in conducting the study. It described the research design, population and sampling procedures, validity and reliability, ethical consideration, the data collection instrument and collection of data and data analysis technique. Chapter 4 will present the data analysis and interpretation of the dissertation.

## **CHAPTER 4**

### **DATA ANALYSIS AND INTERPRETATION**

#### **4.1 INTRODUCTION**

This chapter presents the data analysis and interpretation. The purpose of this study was to evaluate care rendered to HIV-positive women and their infants during the first six weeks after birth. The study evaluated PNC services provided to HIV-positive mothers and their infants during the 6 weeks after birth and to identify gaps in the delivery of quality PNC.

The researcher collected data from the respondents using a structured interview schedule consisting of five sections:

Section contained demographic information about the respondents.

Section B related to PNC provided to HIV-positive mothers during the post-natal period.

Section C dealt with PNC services rendered to HIV-exposed infants immediately after birth and on discharge, within 3–14 days and at the 6-week PNC visit.

Section D collected information on human resources, material resources and organisational resources. Senior midwives at each of the selected study settings were interviewed.

Section E comprised a checklist investigating essential medication, supplies and equipment.

Three hundred and seventy-two respondents participated in the study from November to December 2011. A statistician analysed the data, using the Epi Info version 3.5.1 program. Descriptive and inferential statistics such as frequencies, percentages illustrated in tables and bar graphs were used in the data analysis and summaries.

In some instances, the total percentage of frequencies added up to 99.9% or 100.1% due to rounding-off to one decimal point. These were rounded off to 100.0%.

## 4.2 RESPONDENTS' CHARACTERISTICS

### 4.2.1 Respondents' ages

Age is an important variable in safe reproductive health. The extreme ages (below 19 years and above 35 years) were regarded as high risk of obstetrics with anticipated poor pregnancy outcome (Lowdermilk & Perry 2006:75–76). Table 4.1 displays the ages of respondents (N=372). A majority (36.8%, n=137) were within the age range 25–30 years, 26.9% (n=100) in the range 20–24 years, and 13.4% (n=50) in the range 31–34 years. About 13.4% (n=50) were 35 years old and above and a minority (9.4%, n=35) were within the age range of 15–19 years. The age group 15–19 years is considered an obstetric risk, with many possible challenges including HIV infection and MTCT of HIV.

Table 4.1 Respondents' ages

Age groups	Frequency	Per cent
15–19 years	35	9.4%
20–24 years	100	26.9%
25–30 years	137	36.8%
31–34 years	50	13.4%
35 years and above	50	13.4%
Total	372	100.0%

### 4.2.2 Marital status

Marital status is not an important determinant of HIV infection in Swaziland (National Emergency Council on HIV and AIDS (NERCHA) and Health Economics and HIV/AIDS Response Division (HEARD) 2006:8). The current study reported that 34.1% (n=127) of the respondents were married, 29.8% (n=111) were cohabiting, 29.8% (n=111) were single, 4.0% (n=15) were widowed, 1.9% (n=7) were separated

and 0.3% (n=1) were divorced. Even though it was beyond this study to analyse the probability of whether husbands for the widows had recently died, but their HIV positive status and pregnancy raised a concern on their sexual life lifestyle.

Table 4.2 Respondents' marital status

<b>Present marital status</b>	<b>Frequency</b>	<b>Per cent</b>
Cohabiting	111	29.8%
Divorced	1	0.3%
Married	127	34.1%
Single	111	29.8%
Separated	7	1.9%
Widowed	15	4.0%
<b>Total</b>	<b>372</b>	<b>100.0%</b>

#### 4.2.3 Respondents' level of education

The level of education is associated with the change in attitude towards safe reproductive practices and good understanding of health messages (KoS, CSO 2008:124). In this study of 372 respondents, 36.3% (n=135) reached secondary school, only 31.2% (n=116) had attained high school education, 19.6% (n=73) completed primary education, 7.0% (n=26) attained tertiary education and 5.9% (n=22) had no formal education.

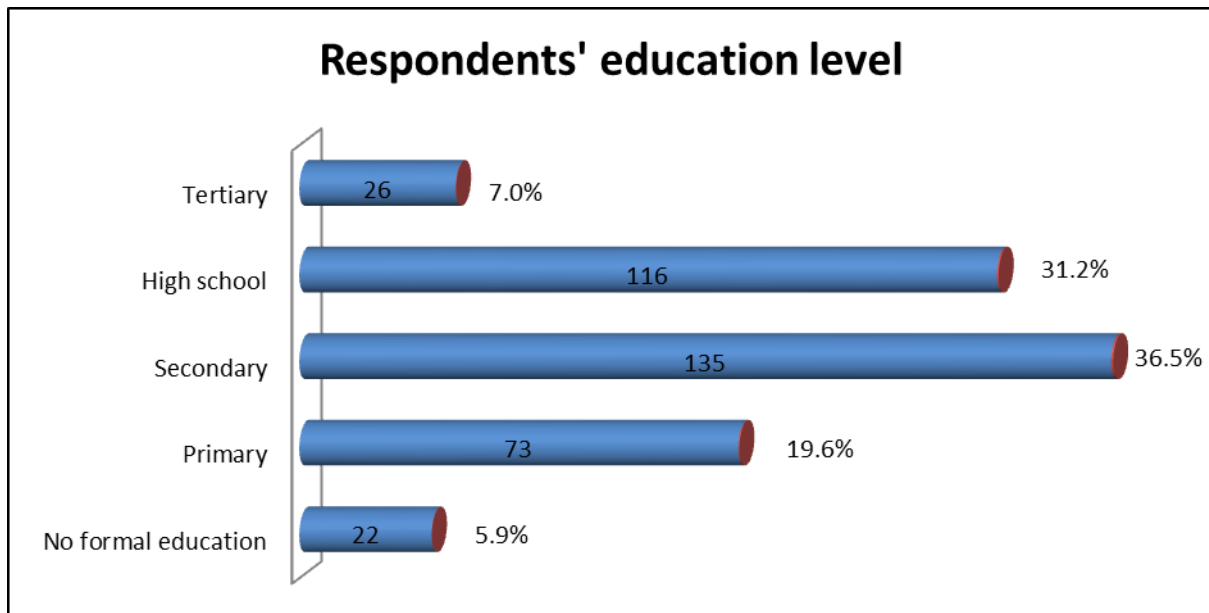


Figure 4.1 Respondents' level of education

#### 4.2.4 Respondents' employment status

Employment may be a deterrent to the use of reproductive health services as clients may be perceived as healthy by their employees (KoS, CSO 2008:126). The study revealed that the majority 51.9% (n=193) of the respondents were unemployed, while 48.1% (n=179) were employed.

Table 4.3 Respondents' occupation

Occupation	Frequency	Per cent
Unemployed	193	51.9%
Employed	179	48.1%
Total	372	100.0%

#### **4.2.5 Residential areas**

The Swaziland Ministry of Health ensured that healthcare services are situated within 8 km from the population to enhance accessibility to health care (KoS, MoH 2010b:30). Just over half of respondents in this study (50.8%, n=189) were living in the peri-urban areas (areas closer to the city with no healthcare facilities), 37.4% (n=139) were residing in rural areas (far from the city with minimal health resources to deliver quality reproductive health services), and 11.8% (n=44) were from urban areas (which had resources for rendering quality reproductive health services). NERCHA and HEARD (2006:7) state that people in the rural places are worst affected than those in urban areas.

#### **4.3 PLACE OF CHILD BIRTH**

Place of birth is important to determine the quality of care rendered to the mother and infant (Murray & McKinney 2006:4). In this study, 93.3% (n=347) delivered in referral hospitals where there were essential resources to render quality PNC services, 6.2% (n=23) delivered at home where there were no resources for providing quality PNC services and where there may have been cultural practices which might have had poor outcome on maternal and neonatal health (Warren *et al.* 2006:80). About 0.5% (n=2) gave birth in rural health clinics with limited resources (operative interventions, blood and intravenous fluids) to render quality PNC services.

#### **4.4 CHILD BIRTH ATTENDANT**

A child birth attendant is an important human resource who offers quality PNC services (Morestin *et al.* 2009:5). Of the 372 respondents in this study, the majority (81.7%, n=304) were assisted by midwives to delivered their babies, 10.5% (n=39) were managed by doctors, 6.2% (n=23) were delivered by traditional birth attendants and 1.6% (n=6) were assisted by both doctors and midwives.

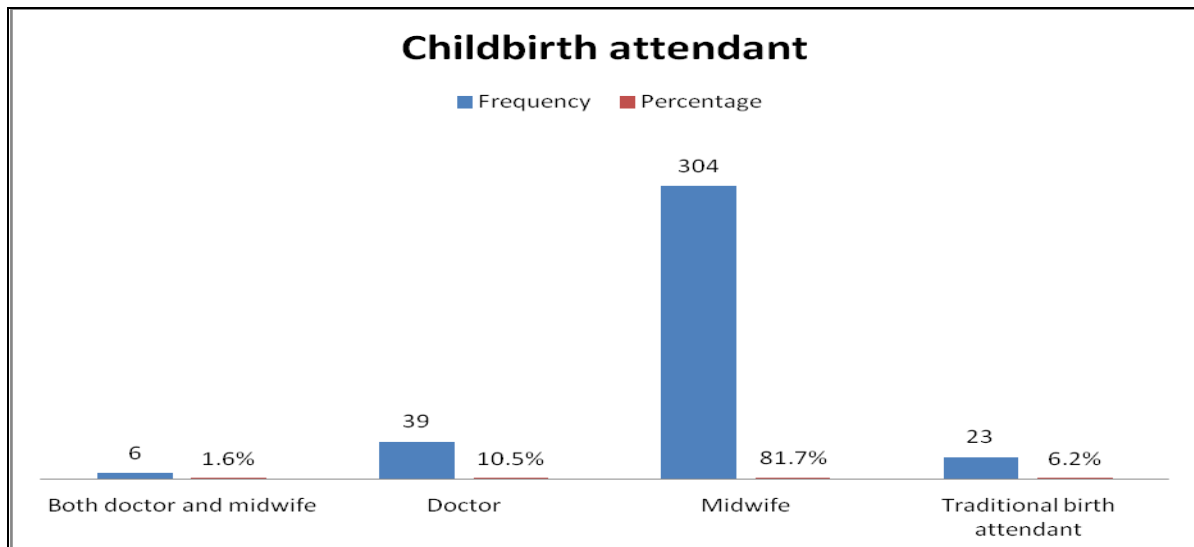


Figure 4.2 Childbirth attendant

#### 4.5 POST-NATAL CARE SERVICES RENDERED TO HIV-POSITIVE MOTHERS

According to the Ministry of Health (KoS, MoH 2010a:36–45), one of the strategies to reduce MMR and IMR is to render quality PNC during three critical puerperal periods:

- immediately after childbirth, in order to assess and manage risks associated with childbirth to both mother and neonate and to give advice on safe feeding practices which may minimise chances of MTCT of HIV and to offer prophylactic ARVs;
- between 3 and 14 days in order to identify and manage early puerperal complications and the adaptation process of the neonate to the extra-uterine environment; and
- at six weeks after delivery in order to assess and manage the recuperation stage, monitor HIV infection, advise the mother on dual family planning methods (use of both condoms and a contraceptive) and to assess general health, growth and development of the baby, including immunisation and prophylactic treatment for HIV infection.



The study results are presented following the pattern of immediate post-natal care, PNC rendered immediately after childbirth, within the first two weeks and the final care offered at six weeks of puerperium.

#### **4.5.1 Immediate PNC services rendered**

The immediate post-natal period is a critical period for the foundation of recuperation, adaptation to the environment and for bonding between mother and baby (London, Ladewig, Ball & Bindler 2007:473). It is therefore important to render quality care to both mother and baby (WHO 2002a:296). Such immediate care concerns the vital signs, physical examination and administration of prophylactic ARV and vitamin A, as described below.

##### **4.5.1.1 Maternal vital signs**

Vital signs are important signs as they measure the level of wellness of any client. To PNC, vital signs are indicators of the recuperation stage. Any deviations from normality would indicate that a PNC client is in danger of puerperal complications (Fraser & Cooper 2003:633).

London *et al.* (2007:578) state that vital signs should be measured to all clients during the critical post-natal care period (1<sup>st</sup> hour after birth). This includes temperature, pulse, respiration and blood pressure. Any deviation from normality would mean that the client is at risk of puerperal complications.

##### **4.5.1.1.1 Temperature**

Measuring temperature would ensure that the client is screened for fever; one of the indicators of puerperal infection with poor obstetric outcome to mothers (Leifer 2008:231). Of all the respondents (N=372) who were involved in this study, only 44.9% (n=167) had their temperature measured. The majority (55.1%, n= 205) were not provided this important clinical intervention, putting these women at risk of having undiagnosed puerperal infection (Leifer 2008:231).

#### 4.5.1.1.2 Pulse rate

Measuring the pulse rate would alert the midwife of puerperal complications, which have an effect on the heart (Leifer 2008:231). Of the 372 respondents who participated in this study, just 26.6% (n=99) had their pulse rate measured. Poor quality of puerperal management may have detrimental effects on the puerperal client (Fraser & Cooper 2009:653). The majority (73.4% or n= 273) were not offered this valuable assessment, which may lead to undiagnosed cardiac problems (Leifer 2008:231).

#### 4.5.1.1.3 Blood pressure

Blood pressure is an important indicator of postpartum pre-eclampsia, eclampsia and puerperal shock (Lowdermilk & Perry 2006:461), and these are major causes of maternal mortality among HIV-positive Swazi women (KoS, MoH 2011d: 7). In this study, of the 372 respondents, 79.8% (n=297) had their blood pressure measured, and about 19.2% (n=75) had their blood pressure not measured, indicating a detrimental gap in the manner PNC was rendered. Of the 75 who had their BP not measured included the 23 who delivered at home and 52, who midwives missed, indicating a gap and provision of poor PNC.

#### 4.5.1.2 HIV antiretroviral medication

It is mandatory for an HIV-positive puerperal client to receive either prophylactic treatment of ARVs or definite ARV treatment, depending on his or her CD4 cell count (KoS, MoH 2010a:14). In this study, of the 372 respondents, only 31.2% (n=116) were asked by childbirth attendants whether they were receiving ARV medication during pregnancy, while the majority (68.8%, n=256) were not asked by childbirth attendants whether they received ARV medication during their pregnancies, including the 6.2% (n=23) who delivered at home.

#### 4.5.1.3 Vitamin A administration

Vitamin A has been identified as the effective component for health and survival of both mothers and children, because it can reduce mortality from all causes by approximately 23%, as it enhances resistance to disease. Hence it is mandatory for HIV-positive post-natal clients to receive the treatment (United Nations Children's Fund (UNICEF) 2007:3). All post-natal women should be given vitamin A as an effective intervention for the health and survival of both mothers and children (KoS, MoH 2010a:38). In this study, 34.1% (n=127) of the respondents were offered vitamin A as recommended by the Ministry of Health (KoS, MoH 2010a:38). The majority (65%, n=245) did not receive the treatment, indicating a gap in quality care with its consequences of poor maternal outcome (UNICEF 2007:3). Midwives failed to adhere and to follow national guidelines.

#### 4.5.1.4 Physical examination

Physical examination immediately after childbirth would identify whether the mother is pale and/or cyanosed, whether the uterus is well contracted to prevent postpartum haemorrhage, to evaluate the psychological state of the woman and to measure the adaptation process following childbirth (London *et al.* 2007:472). In this study, of the 372 respondents, about half (53.2%, n=198) were physically assessed following childbirth, and about (46.8%, n=174) were not offered this critical intervention.

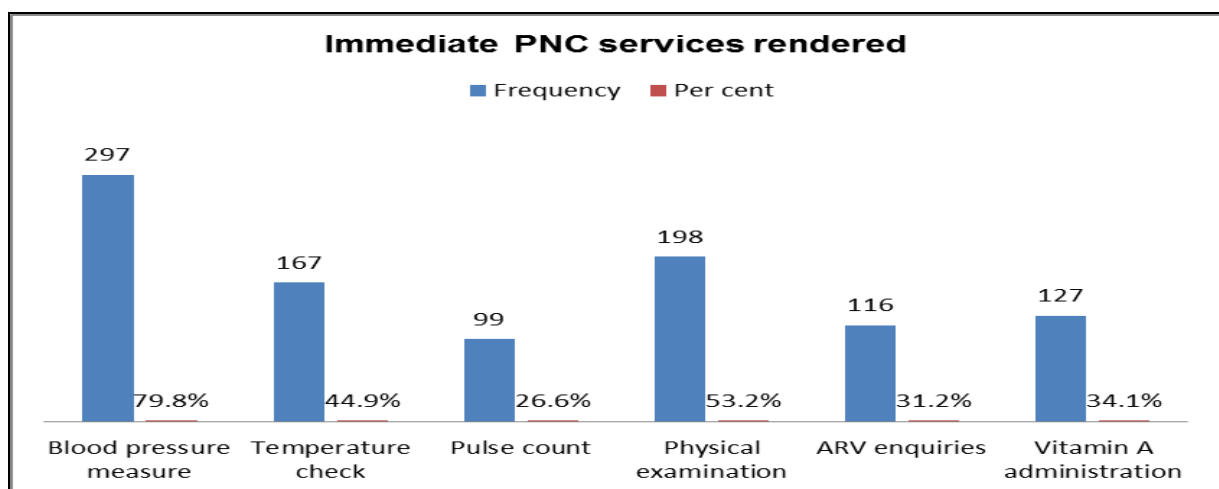


Figure 4.3 Immediate PNC services rendered

### **4.5.2 Immediate PNC information given to HIV-positive mothers**

PNC is crucial not only because of the specific medical interventions but also because of the important health information to be given to the mother to enhance self-care and to care for her baby (Lowdermilk & Perry 2006:604). The information given to mothers was categorised as exclusive breastfeeding, ARV drug adherence, exclusive replacement feeding, and prophylactic measures in terms of MTCT of HIV and perineum care.

#### **4.5.2.1 Exclusive breastfeeding**

Exclusive breastfeeding to HIV-exposed infants is a recommended feeding practice by the WHO (2002b:3) and the Ministry of Health (KoS, MoH 2010a:46) as ideal feeding in view of poor weaning practices which prevail among mothers of infants in Swaziland (KoS, MoH 2010a:46). In this study, of the 372 respondents, only 58.1% (n=216) were advised by midwives to exclusively breastfeed their infants during the first six months of life. This finding indicates that midwives were not rendering quality infant feeding education to HIV mothers, who may give early supplementation or offer both breast and replacement feeds with the consequences of MTCT of HIV infection (KoS, MoH 2010a:46). As many as 41.9% (n=156) were not educated on exclusive breastfeeding.

#### **4.5.2.2 Exclusive replacement of feeds**

Exclusive replacement of the infant's feeds is recommended by the WHO (2001:8) and the Ministry of Health (KoS, MoH 2010a:47) in the case of HIV-positive mothers who are unwilling to breastfeed exclusively. However, it is important to follow and ensure that clients are conversant with the acceptable, feasible, affordable, sustainable and safe (AFASS) criterion, which states that, if the mother fails to meet this criterion practicing exclusive replacement feeding this may increase morbidity and mortality among young infants (WHO 2008b:8). In this study, about 56.2% (n=209) of mothers received education about exclusive replacement feeding as a

prophylactic measure to prevent MTCT of HIV during the puerperium. As many as (43.8%, n=163) were not given this important information.

#### 4.5.2.3 Antiretroviral drug adherence

ARV drug adherence is important to keep the viral load down, to prevent opportunistic infections and to prevent MTCT of the virus (WHO 2006:6). In this study, only 38.7% (n=144) of the respondents were taught about adherence to ARV treatment; the majority (61.3%, n=228) were not given this vital information.

#### 4.5.2.4 Perineal hygiene

Perineal hygiene is vital during the post-natal period. Failure to observe perineal hygiene may encourage ascending infection to the uterus, which may result in uterine infection (Fraser & Cooper 2003:632). In this study, less than half (39.5%, n=147) of the respondents were taught by midwives about perineal hygiene using saline sitz baths, and about 60.5% (n=225) were not educated on perineal hygiene.

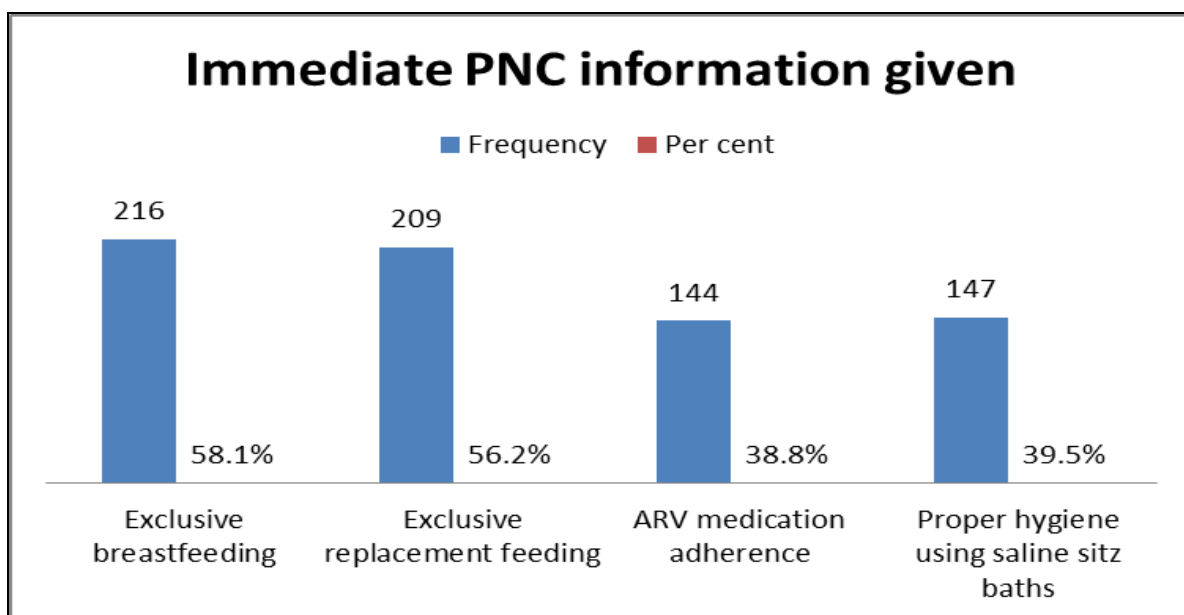


Figure 4.4 Immediate PNC information given to HIV-positive mothers

## **4.6 POST-NATAL CARE SERVICES RENDERED TO HIV-POSITIVE MOTHERS INCLUDING THE DISCHARGE PLAN**

Generally, post-natal clients are discharged within twenty-four hours in the case of clients who have had a normal childbirth. In the case of high-risk childbirth, mothers are discharged after seven days. PNC services in terms of discharge procedures are discussed in the next few paragraphs.

### **4.6.1 Maternal vital signs**

All post-natal women should be provided with quality PNC before discharge from health facilities in order to identify possible complications and make essential interventions before they become life threatening (London *et al.* 2007:586).

#### **4.6.1.1 Blood pressure**

Blood pressure readings should remain stable after birth; however, a decrease may relate to excessive blood loss and an elevation may suggest puerperal pre-eclampsia and indicates the need for urgent obstetric intervention (Leifer 2008:231). In this study, 64.5% (n=240) mothers had their blood pressure measured, a further 35.4% (n=132) of respondents were not screened for any changes in blood pressure.

#### **4.6.1.2 Temperature**

The woman's body temperature during the first 24 hours after birth may rise to 38 degrees Celsius, but after the 24 hours, the maternal temperature should not be higher than 38 degrees Celsius. Any elevated temperature persisting longer than 24 hours and which exceeds 38 degrees Celsius should be attended to urgently, because it may indicate puerperal infection (Leifer 2008:231). Of all the respondents, just over half (53.5%, n=199) had their temperature measured; the remaining 46.5% (n=173) left the health facility without being monitored regarding their temperature.

#### **4.6.1.3 Pulse**

Post-natal women should have their pulse rate monitored, as an elevated heart rate may be indicative of blood loss, puerperal infection, puerperal anxiety or a cardiac problem, which requires prompt obstetric care (Murray & McKinney 2006:409). Of the 372 respondents who participated in this study, only 25.0% (n=93) had their pulse rate measured; the majority (75.0%, n=279) were not offered this valuable PNC intervention.

#### **4.6.2 Physical examination**

Lowdermilk and Perry (2006:467) state that physical examination of the mother after birth is crucial, as the maternal organs undergo readjustment to the nonpregnant state and the functions of the body systems begin to stabilise. Therefore, physical examination is crucial to monitor the progress of readjustment to the pre-pregnant state. Of all the respondents, 40.6% (n=151) reported to have had a complete physical examination before they were discharged home; the majority (59.4%, n=221) were not physically examined to determine how they were recuperating.

#### **4.6.3 Family planning counsel**

Prevention of re-infection of HIV by using dual contraception methods among HIV-positive women should be emphasised at every contact with midwives (KoS, MoH 2010a:13). Of the 372 respondents who participated in this study, the majority (85.5%, n=318) were counselled on family planning practices before leaving the health facility; only 14.5% (n=54) were not provided with information on family planning.

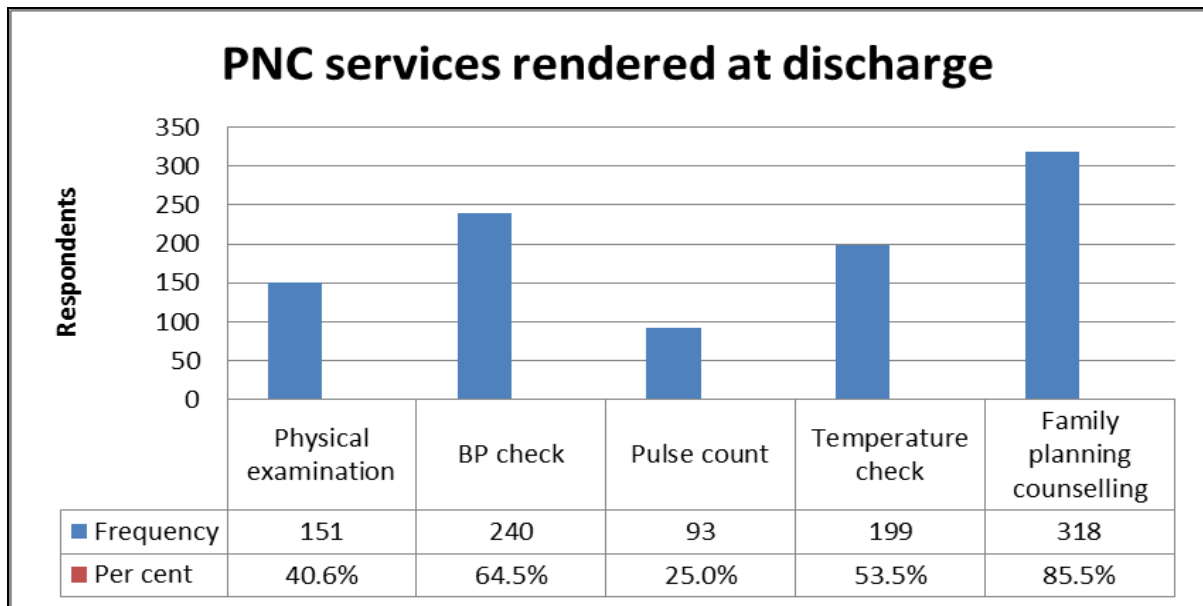


Figure 4.5 Post-natal care services rendered to HIV-positive mothers on discharge

#### 4.7 PNC INFORMATION GIVEN ON DISCHARGE HOME

Health education on maternal danger signs (which included vaginal bleeding, fever, and headache), immunisation and adherence to prophylaxis may promote health and wellbeing of mothers and infants (KoS, MoH 2010a:38). Each of these aspects was investigated in this study as indicated in the paragraphs below.

##### 4.7.1 Maternal danger signs

Women should be equipped with knowledge on specific maternal danger signs, so that they may seek medical care as early as possible. This will ensure that complications are identified before they become life threatening. These included vaginal bleeding, which may indicate poor uterine contractions (Lowdermilk & Perry 2006:455), fever indicating the possibility of puerperal infection (Leifer 2008:231), and headache which may be suggestive of puerperal pre-eclampsia (Lowdermilk & Perry 2006:461), especially because pre-eclampsia or eclampsia are among the leading causes of maternal mortality among HIV-infected post-natal women in Swaziland (KoS, MoH 2011d:7). In this study, a majority (72.0%, n=268) of the respondents were taught on maternal danger signs, which included fever, vaginal



bleeding, and headache, and about 18.0% (n=104) were not educated on these life-threatening puerperal conditions.

#### **4.7.2 Immunisations**

Universal immunisation of children against the vaccine-preventable diseases is crucial to reduce infant and child mortality (WHO & UNICEF 2005:16). Therefore, all infants should be immunised against vaccine-preventable diseases according to the national expanded programme on immunisation, regardless of their HIV-exposure status (KoS, MoH 2010a:38). On discharge from health facilities, mothers should therefore be educated about the immunisation schedule, especially for the primary immunisations, which are at birth, at 6 weeks, 10 weeks and 14 weeks. A majority (91.9%, n=342) in this study were informed about the immunisation schedule, and about 8.1% (n= 30) were not given this information on vaccine-preventable diseases.

#### **4.7.3 Co-trimoxazole prophylaxis**

Co-trimoxazole reduces morbidity and mortality among infants exposed to HIV, by preventing opportunistic infections (WHO 2006:8). It should be given to all exposed infants from six weeks of life until definite HIV-negative status of the child has been determined. If tested HIV-positive, the child should take it for life (KoS, MoH 2010a:50). Mothers should be educated on the benefit of administering this HIV prophylaxis treatment early so that they can attend PNC as advised and adhere to treatment regime. In this study, 88.7% (n=330) were counselled on co-trimoxazole prophylaxis, while as many as 11.3% were not counselled on co-trimoxazole prophylaxis, yet failure to comply to co-trimoxazole prophylaxis would result in the occurrence of opportunistic infections, which are the leading causes of morbidity and mortality (KoS, MoH 2010f:57).

#### **4.7.4 Nevirapine prophylaxis**

All HIV-exposed infants should be offered NVP prophylaxis treatment. In the case of mothers who are on ART, infants should receive NVP until they are six weeks old.

Mothers who received ARV prophylaxis while breastfeeding, should take NVP throughout the breastfeeding period and until one week after the cessation of breastfeeding (KoS, MoH 2010a:49). In this study, the majority (94.1%, n=350) were informed on NVP prophylaxis and about 5.9% (n=22) were not educated about NVP prophylaxis.

#### **4.7.5 Post-natal care at 3–14 days peuperium**

All women, irrespective of HIV status, should attend the postpartum visit within 3–14 days for follow-up PNC interventions to determine the infant's adaption to extra-uterine life and the maternal recuperating stage. Midwives should counsel mothers on the importance of attending the postpartum visit within 3–14 days after delivery to access PNC interventions for quality survival (both for themselves and for their infants), which they may access by attending this PNC visit (KoS, MoH 2010a:39). The majority (93.8%, n=349) were advised on the 3–14 days' PNC visit, while 6.2% (n=23) were not advised on the importance of attending PNC within 3–14 days after delivery.

#### **4.7.6 Post-natal care at 6-weeks post-natal visit**

Following the delivery, every mother should be advised to attend the six-week PNC visit, in order for midwives to identify signs and symptoms of life-threatening conditions, e.g. persistent vaginal bleeding, urinary retention and postpartum pre-eclampsia and to monitor the progression of HIV to AIDS (KoS, MoH 2010a:39). In this study, 94.4% (n=351) were counselled on the importance of attending the 6-weeks PNC visit, and about 5.6% (n=21) were not provided with information on the importance of attending the 6-weeks PNC visit, indicating a gap in the manner midwives rendered PNC.

#### **4.7.7 Safe feeding practices**

One of the recommendations by the WHO, UNAIDS, UNFPA and UNICEF (2010:6) deals with exclusive breastfeeding in the first six months of life among HIV-positive mothers for the health and nutritional benefit of their infants (KoS, MoH 2010a:46).

Midwives should recommend, educate and support mothers to exclusively breastfeed their infants (KoS, MoH 2010a:46). In this study, the majority (93.5%, n=348) were educated by midwives to exclusively breastfeed their infants. A concern was raised regarding the 6.5% of respondents who were not educated on this important feeding practice.

#### 4.7.8 Maternal nutrition

Maternal nutrition is crucial for both the survival of the HIV-infected mother and the HIV-exposed baby. Midwives should counsel mothers on the importance of a proper diet based on local available foods (Leifer 2007:2305). Murray and McKinney (2006:193) state that during the first 6 months of lactation, high-energy foods, proteins, vitamins and minerals are needed, as lactating mothers with poor diets may have reduced milk levels of fatty acids, selenium, iodine and some B vitamins. The majority (83.1%, n=309) in this study were taught on the importance of adhering to a balanced diet, and about 16.9% (n=63) were not taught on the importance of adhering to a balanced diet to promote their health and prevent MTCT of HIV.

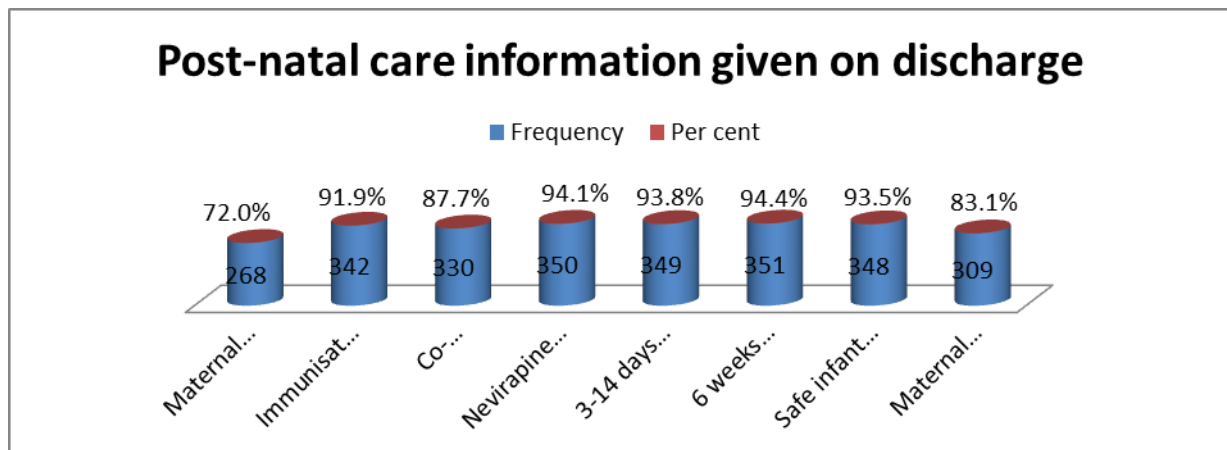


Figure 4.6 Post-natal care information given on discharge

## 4.8 MEDICAL SUPPLIES GIVEN ON DISCHARGE

According to the guidelines by the Ministry of Health (KoS, MoH 2010a:37), all HIV-positive post-natal clients should be given an infant NVP clip (a device to measure the right NVP dosage) to administer NVP prophylaxis for at least six weeks (for mothers on ART) and for the duration of breastfeeding until one week after cessation of breastfeeding (for mothers who received ARV prophylaxis), in order to prevent the transmission of HIV to the infant (WHO 2010a:35). In this study, 93.5% (n=348) were offered the prophylactic paediatric NVP prophylaxis to give to their infants during the first six weeks of life, while 6.5% (n=24) were not offered this information.

Additional medical supply that is offered to mothers is a clip and a 5-ml syringe to facilitate the administration of the right dose to the infant. The findings from this study indicated that 93.5% (n=348) of respondents were offered a syringe, and about 6.5% (n=24) were not offered a syringe and 66.4% (n=247) were offered the NVP clip, which works together to measure and administer the correct dose of paediatric NVP. Concern was raised about the 35.6% (n=125) who were not given the clip for NVP dosage measurement

### 4.8.1 Nevirapine prophylaxis

It is mandatory that all infants exposed to HIV be initiated on NVP prophylaxis for at least six weeks. In the case mothers who are breastfeeding, this prophylactic treatment is extended to one week beyond the cessation of breastfeeding (KoS, MoH 2010a:36). In this study, 99.7% (n=348) of the 349 respondents who gave birth at health facilities were given the NVP prophylaxis to administer to infants at home, while only 0.3% (n=1) was not given the NVP prophylaxis. Of the 23 respondents who delivered at home, none (100%, n=23) were given the NVP prophylaxis, and concern was raised about the 6.5% (n= 24) who had not been given NVP prophylaxis.

#### 4.8.2 Nevirapine clips

The Ministry of Health (KoS, MoH 2010a:37) states that NVP dosing should be accurately measured and administered to HIV-exposed infants from birth to six weeks. The correct dose for paediatric NVP is 1.5 ml daily. This is accurately measured by the use of 1.5-ml NVP clips. Mothers should be competent in measuring the right dose before they are discharged home. Failure to acquire this skill may result in inappropriate dosing with its consequences of MTCT of HIV infection (KoS, MoH 2010a:37). Of the 372 respondents, 66.4% (n=247) were issued with the NVP clips, and about 33.6% (n= 125) were not given NVP clips, including the 6.2% who delivered at home. However, it was beyond the scope of the study to evaluate whether mothers were giving the right dose by using this measuring device.

#### 4.8.3 Nevirapine 5-ml syringe

The NVP 5-ml syringe is helpful in measuring the right NVP dosage by using the NVP clip. The NVP syringe ensures that the mother draws the right dosage for administration (KoS, MoH 2010a:37). The majority of the respondents (99.7%, n=348) who delivered at health facilities were given the NVP 5-ml syringes for measuring and administering NVP syrup to their infants, and only 0.3% (n=1) was not given the syringe. Of the 23 who delivered at home, none (100%, n=23) were given the 5-ml syringe. Concern was raised about the 6.5% (n=24) who were not offered the 5-ml syringe for measuring the right dosage.

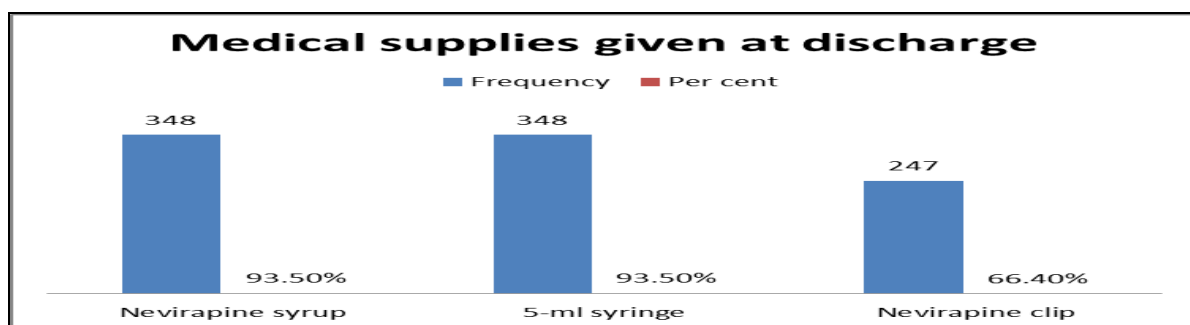


Figure 4.7 Medical supplies given at discharge

## 4.9 MEDICAL SUPPLIES USAGE DEMONSTRATION BY MIDWIVES

Instruction and demonstration on the use of the medical supplies which were distributed to respondents were mandatory to ensure proper and efficient use of supplies and to enhance adherence to the prophylactic treatment (KoS, MoH 2010a:37). Of the 372 respondents, 86.3% (n=321) indicated that they received information and demonstration of using the supplies/instruments to administer ARVs to their infants, while 13.7% (n=51) did not receive the relevant instructions from the midwives on the use of the medication. Lack of knowledge on the use of the instruments to administer medication to their infants may result in poor administration and lack of adherence to ARV prophylaxis.

Table 4.4 Medical supplies usage demonstration by midwives

Demonstration of medical supply use	Frequency	Per cent
Agree	321	86.3%
Disagree	51	13.7%
<b>Total</b>	<b>372</b>	<b>100.0%</b>

### 4.9.1 Respondents' return demonstration on the use of medical supplies

Mothers should practice and be competent in using the medical supplies before they are discharged home to enhance adherence to medication (KoS, MoH 2010a:37). Of all the 372 respondents, a majority (72.8%, n=271) reported that they were allowed to practice using the instruments before they were discharged home, while 27.2% (n=101) indicated that they were not given a chance to practice the usage of the medical supplies.

Table 4.5 Respondents' return demonstration on medical supplies

Return demonstration	Frequency	Per cent
Agree	271	72.8%
Disagree	101	27.2%
<b>Total</b>	<b>372</b>	<b>100.0%</b>

#### **4.9.2 Respondents' assurance of support from mentor mother or expert client by midwives**

Midwives should encourage consistent counselling and support to HIV-positive mothers by mentoring mothers and/or expert clients (people living with HIV and trained on psycho-social support during the post-natal period (KoS, MoH 2010a:37). Of the 372 respondents, the majority (70.7%, n=263) agreed that they received support from mentor mothers (women who are trained on prevention of mother to child transmission of HIV) and/or expert clients to whom they were referred to by midwives, while 29.3% (n=109) did not receive support from mentor mothers and/or expert clients to whom they were referred by midwives.

#### **4.10 POST-NATAL CARE SERVICES PROVIDED TO HIV-POSITIVE MOTHERS WITHIN 3–14 DAYS**

The PNC services rendered to HIV-positive post-natal women was evaluated in this study, as post-natal women should attend postpartum visits within 3–14 days following the date of delivery (KoS, MoH 2010a:39). The quality of PNC services provided to the 372 respondents during the 3–14 days was evaluated.

##### **4.10.1 Taking history and conducting physical assessment**

The provision of quality PNC involves taking the pregnancy, labour and birth history, performing the physical examination of the mother, promoting and supporting uninterrupted exclusive breastfeeding and identifying puerperal problems (Murray & McKinney 2006:401).

#### **4.10.1.1 Pregnancy history**

According to the ICM (2002:10), it is the professional responsibility of midwives to take a comprehensive history from post-natal women. This may help midwives to have baseline information about the clients' pregnancy progress, risks and problems that they had (like pregnancy-induced hypertension). These may require close monitoring, which should include details of the pregnancy. This might inform midwives regarding who had a low CD4 and who should be initiated on ART to prevent MTCT of HIV (KoS, MoH 2010a:39).

In this study, of the 372 respondents, only 48.4% (n=180) had their pregnancy history taken. The majority (51.6%, n=192) were not asked about their pregnancies, which could have helped in identifying possible complications like low haemoglobin levels and recurrent opportunistic infections, which could have increased the risk of MTCT of HIV.

#### **4.10.1.2 Medication ingested during pregnancy**

Midwives should ascertain the ARV regimen the mother received during pregnancy and whether zidovudine and lamivudine prophylaxis had been given to the mother, if these were not given after delivery (KoS, MoH 2010a:44). This is a crucial part in the provision of quality PNC to HIV-positive mothers. However, in this study only 55.4% (n=206) were asked about ARV medication they had taken during their pregnancy.

#### **4.10.1.3 Intrapartum history**

The Ministry of Health (KoS, MoH 2010a:33) states that most maternal deaths are ascribed to complications related to labour and delivery, such as obstructed labour and uterine rupture. In addition, the most cases of MTCT of HIV occur during the intrapartum phase, with a 15–20% transmission rate. Given the importance of the intrapartum period, midwives should strive to collect quality intrapartum history in



order to minimise puerperal complications that might compromise immunity and cause AIDS (KoS, MoH 2010a:33). In this study, only 26.6% (n=99) reported that midwives collected their intrapartum history in order to render quality care. The majority (73.4%, n= 273) were not assessed as regard their intrapartum history. These findings indicate that quality care was compromised.

#### **4.10.1.4 Place of birth**

The actual place of birth has an influence on the quality of medical attention and hygienic conditions during delivery, which may have an effect on the quality of care and on morbidity and mortality, either of the mother or the baby (Murray & McKinney 2006:4). Therefore, in order to render quality PNC, midwives should inquire about the place of birth. In this study, 62.1% (n=231) were asked about the place of birth and 37.9% did not provide the place of birth because they were not asked by midwives.

#### **4.10.1.5 Mode of delivery**

Midwives should take a comprehensive history, including the mode of delivery in order to identify complications such as trauma and intrapartum bleeding, which will enhance mother-to child-transmission of HIV (Leifer 2008:291). In this study, 62.1% (n=231) were asked about the mode of delivery and the remaining 37.9% (n=141) were not required to offer this important history.

#### **4.10.2 Breast examination**

Lowdermilk and Perry (2006:460) state that midwives should assess the process of lactation and common breast problems including breast engorgement, breast abscesses and cracked nipples. These breast conditions are likely to enhance MTCT of HIV (KoS, MoH 2010a:11). Therefore, midwives should perform focused breast examinations to identify problems in order to manage them to ensure uninterrupted exclusive breastfeeding. In this study, only 56.2% (n=209) of the respondents had their breasts examined during the 3–14-day PNC visit. This implies that 43.8%

(n=163) were at risk of breast problems, which may result in problems with breast-feeding with consequences of early supplementation, a practice that may enhance MTCT of HIV (KoS, MoH 2010a:46).

#### **4.10.3 Pelvic examination**

It is the professional duty of midwives to perform quality and focused pelvic examination to assess uterine involution and healing of lacerations and/or repairs in order to identify and manage maternal puerperal problems and perineal infections early (ICM 2011:14). The provision of quality PNC entails proper pelvic examination; however, in this study, 40.6% (n=151) of the respondents received pelvic examination while the majority (59.4%, n=221) did not have physical examinations at the 3–14-day PNC visit.

#### **4.10.4 Blood pressure**

Following the birth of the baby, measurement of the blood pressure is crucial, for the identification and management of postpartum problems, which may include hypovolemia and postpartum pre-eclampsia (ICM 2002:10). In this study, the majority (85.2%, n=317) had their blood pressure checked and about 14.8% (n= 55) did not have their blood pressure measured.

#### **4.10.5 Pulse**

Making a note of the pulse rate is probably one of the least invasive and most cost-effective observations a midwife could undertake to obtain valuable clinical information about the mother (Fraser & Cooper 2009:659). Leifer (2008:231) states that any rise in the heart rate may suggest puerperal infection, blood loss and heart-related disorders. In this study, only 26.6% (n=99) had their pulse rate measured, while the majority (73.4%, n= 273) did not undergo this intervention.

#### 4.10.6 Temperature

It is necessary to observe temperature changes in post-natal women to identify the early possibility of maternal infection, especially in terms of opportunistic HIV-related infections after birth in order to initiate treatment or to refer the mother to a doctor for advanced management (Leifer 2008:231). Of the 372 respondents, 51.1% (n=190) had their temperature measured during the 3–14-day PNC visit; the remaining 48.9% (n=182) were not assessed for their temperature, which is an indication of poor quality care.

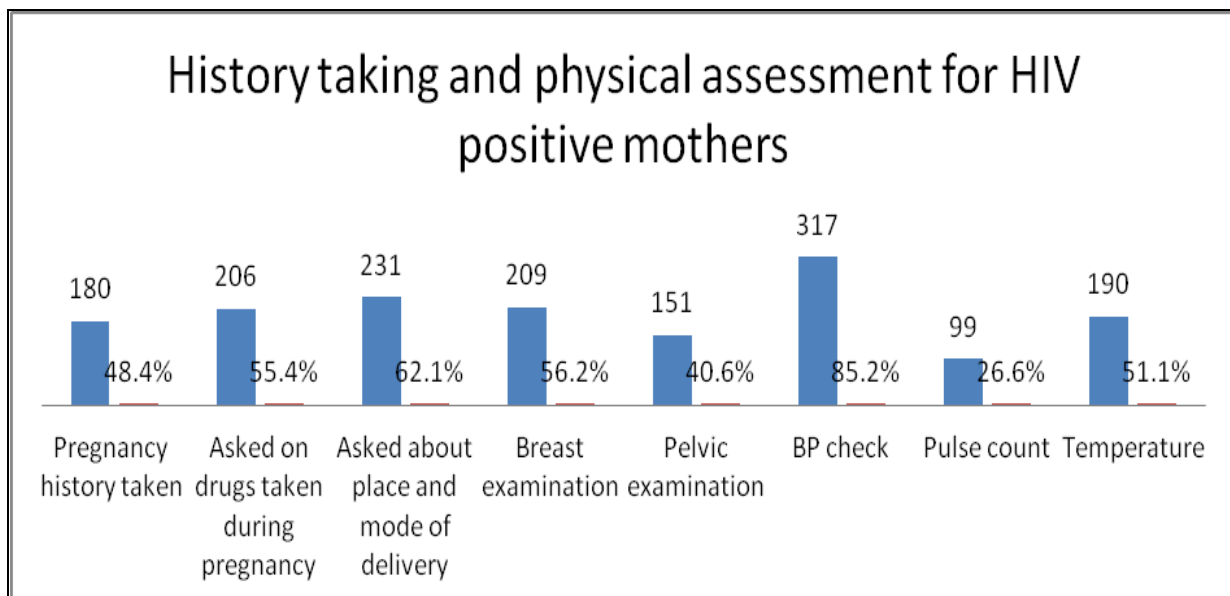


Figure 4.8 History taking and physical assessment for HIV-positive mothers within 3–14 days.

#### 4.11 ADDITIONAL POST-NATAL CARE SERVICES RENDERED TO RESPONDENTS

All women, irrespective of their HIV status, should attend the postpartum visit within 3–14 days of births, so that midwives may assess the maternal readjustment to the pre-pregnant state and provide PNC services, like ARV prophylaxis and laboratory evaluations (CD4 and haemoglobin levels) (ICM 2002:9). These interventions are discussed in the paragraphs below.

#### **4.11.1 Nevirapine prophylaxis**

All HIV-exposed infants should be given NVP prophylaxis to reduce the risk of acquiring HIV. In the case of mothers on ART, their infants should receive NVP until six weeks, and mothers who received ARV treatment while breastfeeding should take NVP until one week after breastfeeding has stopped (KoS, MoH 2010a:42). In this study, the majority (95.2%, n=354) of the infants were given the infant NVP prophylaxis and in 4.8% (n=18) of the cases, health care provision by midwives was of a sub-standard nature.

#### **4.11.2 Adherence to antiretroviral treatment**

Adherence to the NVP prophylaxis for effective prevention of MTCT of HIV cannot be overemphasised. Adherence will prevent MTCT of HIV; thus reducing infant morbidity and mortality (KoS, MoH 2010a:49). Therefore, midwives should provide on-going counselling on adherence at every PNC contact with the women. Of the 372 respondents, 92.5% (n=344) were offered adherence counselling, and 6.5% (n=28) were not offered adherence counselling regarding NVP prophylaxis.

#### **4.11.3 Screened for tuberculosis**

The Ministry of Health (KoS, MoH 2010f:57) states that tuberculosis is the most common opportunistic infection and leading cause of mortality among people living with HIV in Swaziland. All HIV-infected post-natal women should be screened for TB, so that they can be initiated to treatment very early (KoS, MoH 2010a:58). Of all the respondents (N=372), only 33.6% (n=125) were screened for TB; the majority (67.4%, n=247) were not screened during the 3–14-day PNC visit.

#### **4.11.4 Haemoglobin test**

Haemoglobin levels for mothers who have been exposed to ARVs, especially zidovudine, should be monitored because this treatment lowers haemoglobin levels (KoS, MoH 2011a:29). Midwives, therefore, should test haemoglobin levels to out

rule or identify and manage anaemia early, before it can become a life-threatening condition. However, in this study, only 29.0% (n=108) had their haemoglobin levels tested, and the majority (71.0%, n=264) were not tested for haemoglobin deficiency, putting these women at risk of having undiagnosed anaemia.

#### **4.11.5 CD4 count**

A low maternal CD4 cell count is a risk factor for MTCT of HIV (KoS, MoH 2010a:11). The CD4 cell count test should be done to determine ART eligibility of women within the first 14 days after delivery (KoS, MoH 2010a:41). However, this study reports that of the 372 respondents who participated in this study, only 32.3% (n=120) had a CD4 cell count at the 3–14-day PNC visit. The majority (67.7%, n=252) did not undergo a CD4 cell count, making women eligible for ART initiation to go without the benefits of ART (in order to reduce HIV-related morbidity and mortality and to reduce transmission within discordant couples, from mother to child (KoS, MoH 2010f:19).

#### **4.11.6 Food supplements offered**

According to the Ministry of Health (KoS, MoH 2010f:109), nutritional problems can be seen in both asymptomatic and symptomatic people living with the HIV. HIV infection has negative effects on the body's nutritional status, but adherence to a balanced diet has great impacts, strengthening the immune system to fight opportunistic infections and delaying the progression of the disease. All HIV-positive postpartum mothers should be provided with food supplements (multivitamins), to boost their nutritional status (KoS, MoH 2010a:25). In this study, only 25.8% (n=96) of women were given food supplements, while the majority (74.2%, n=276) were not given any food supplements. This reveals that midwives had failed to provide quality PNC.

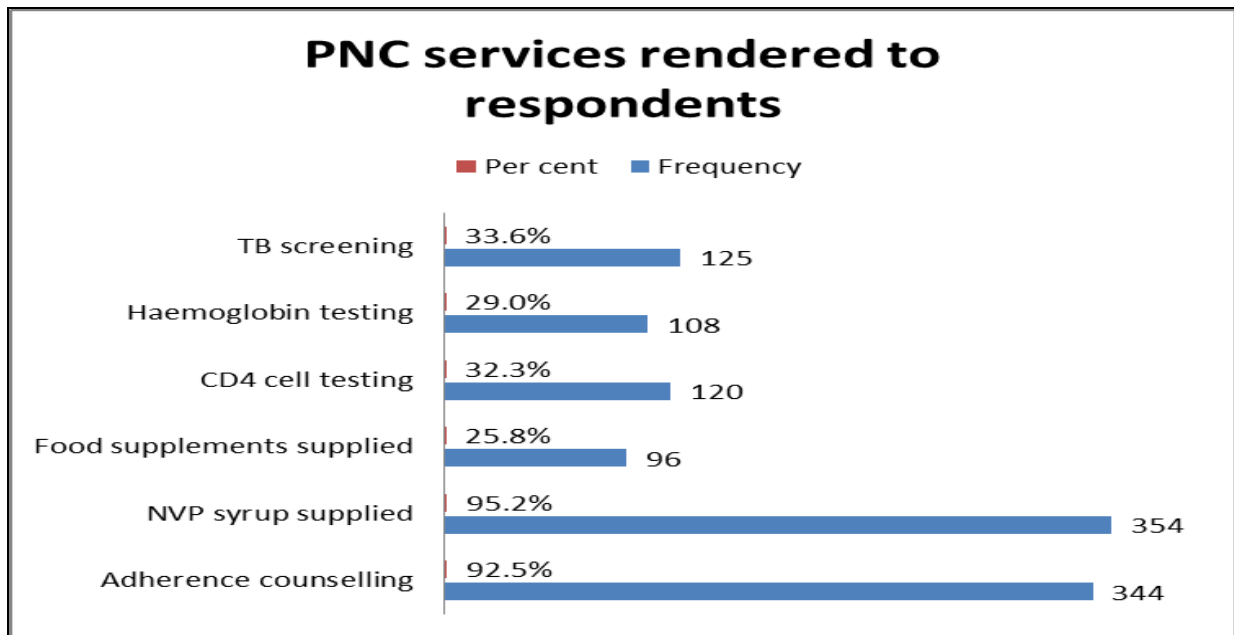


Figure 4.9 PNC services rendered to respondents

#### 4.12 POST-NATAL CARE INFORMATION GIVEN AT THE 3–14-DAY VISIT

Continuous health education on PNC is an integral part of quality PNC; therefore midwives should counsel, educate and advise post-natal women at all PNC visits (KoS, MoH 2010a:38). This study evaluated the PNC information given to mothers, and responses were categorised as relating to hygiene, maternal danger signs, exclusive breastfeeding, condom usage and early infant diagnosis of HIV. These are discussed below.

##### 4.12.1 Personal hygiene

Mothers should ensure that basic hygiene principles, which include perineal care through sitz baths, and hand washing are followed, to prevent maternal and childhood infections which may include diarrhoea in the infant and septicaemia in the mother. These infections could lead to morbidity and mortality (Leifer 2008:243). It is the responsibility of midwives to educate mothers on basic hygiene practices, which include perineal care, hand washing and newborn care (Leifer 2008:243). In this study, 65.1% (n=242) of the respondents reported to have been counselled on

personal hygiene, indicating that sub-standard PNC was rendered to about 34.9% (n= 130) of post-natal women.

#### **4.12.2 Exclusive breastfeeding**

Midwives should promote exclusive breastfeeding and counsel women on these practices regardless of their HIV status. Midwives should support exclusive breastfeeding as a nutritional intervention to minimise MTCT of HIV (WHO 2011b:7). Of the 372 respondents, 91.1% (n=339) were counselled on exclusive breastfeeding and about 8.9% (n=33) were not provided with information on the benefits of exclusive breastfeeding.

#### **4.12.3 Maternal danger signs**

Parents should be educated on maternal signs and symptoms of life-threatening conditions that may arise during the postpartum period (e.g. vaginal bleeding, postpartum pre-eclampsia and fever) (Lowdermilk & Perry 2006:820). These conditions are regarded as obstetric emergencies because they require urgent and prompt obstetric care. Failure may result in death (Lowdermilk & Perry 2006:810). Results in this section will be presented as follows: vaginal bleeding, fever and dizziness and headache.

##### **4.12.3.1 Vaginal bleeding**

Postpartum haemorrhage is the national leading cause of maternal mortality, accounting for 29.4% maternal deaths in Swaziland (KoS, MoH 2011d: 9). For an HIV-positive woman, postpartum haemorrhage may result in a serious decrease in the haematocrit ratio of 10% or more which might require blood transfusion (Murray & McKinney 2006:734). Midwives should educate mothers that any postpartum vaginal bleeding is an indication of an obstetric emergency requiring urgent obstetric intervention (Murray & McKinney 2006:738). In this study, 61.6% (n=229) were counselled on the dangers of postpartum vaginal bleeding, indicating that 38.4% (n=143) of respondents were not advised on the dangers of vaginal bleeding during the post-natal period.

#### **4.12.3.2 Fever**

HIV-infected women are at risk of puerperal infection due to their compromised immunity (KoS, MoH 2010f:7). Therefore, midwives should educate mothers that fever may indicate infection or a progression of HIV to AIDS (KoS, MoH 2010f:109). They should also be advised to seek medical care urgently for advanced management (Leifer 2008:344). In this study, 61.6% (n=229) were counselled on the dangers of puerperal fever; the other 38.4% (n=143) did not receive this vital information. This finding may indicate that clients were not being made aware of the dangers of fever that may indicate progression to AIDS.

#### **4.12.3.3 Dizziness and headache**

Hypertension is the most common obstetric complication of pregnancy, labour and delivery and the postpartum period, and a significant contributor to maternal morbidity and mortality globally (Lowdermilk & Perry 2006:716). Pre-eclampsia is the second worldwide leading cause of maternal mortality (WHO 2002a:15), and in Swaziland, pre-eclampsia and/or eclampsia contribute(s) to 10.3% of maternal deaths among HIV-infected women (KoS, MoH 2011d: 9). Therefore, mothers should be educated to report any signs of pre-eclampsia, which may include dizziness and headache, and they should be made aware of the seriousness of these symptoms and of the importance to seek obstetric care if experiencing them. In this study, 61.6% (n=229) were counselled on dizziness and headache as signs and symptoms of a serious postpartum complication (postpartum pre-eclampsia), and 38.4% (n=143) were not advised on the possible puerperal indications of dizziness and headache that may be detrimental to their lives.

#### **4.12.3.4 Family planning counselling**

Leifer (2008:354) states that mothers should be informed about the prevention of unintended pregnancy and protection against sexually transmitted infections, including HIV. The Ministry of Health (KoS, MoH 2010a:13) emphasises that



prevention of unintended pregnancies among women living with HIV should be discussed at every contact with midwives.

Therefore, midwives should counsel HIV-infected women on the importance of family planning and the available family planning methods. In this study, 65.9% (n=245) of the women were counselled on the importance of family planning, and 34.1% (n=127) of the respondents might have been at risk of having unintended pregnancies, because they were not informed about family planning options.

#### **4.12.3.4 Counselling on condom usage**

Leifer (2008:356) state that a condom is considered a barrier method. It helps in the prevention of pregnancy and sexually transmitted infections, and in mothers living with HIV it also prevents re-infection by different HIV strains. The use of condoms should be promoted together with other family planning methods (KoS, MoH 2010a:44). Of the 372 respondents who participated in this study, 75.0% (n=279) were counselled on the use of condoms, and 25.0% (n=93) were put on risk of having unintended pregnancies and HIV re-infection, which could increase the chances of MTCT of HIV.

#### **4.12.3.5 Early infant diagnosis of HIV**

Collecting infant blood samples by dry blood spot (DBS) for HIV testing is used for early infant diagnosis of HIV, and is the entry point for HIV-exposed infants to be enrolled on ART if found HIV-positive early, thus reducing the risk of infant morbidity and mortality (KoS, MoH 2010a:54). Therefore, mothers should be educated on the time and importance of early infant diagnosis of HIV. In this study, 89.5% (n=333) reported to have been counselled by midwives on the importance of early infant HIV diagnosis, and 19.5% (n=39) were not offered this critical information to ensure early HIV testing of their infants.

#### **4.13. POST-NATAL CARE SERVICES RENDERED AT 6-WEEK VISIT**

The six-week postpartum visit is important for all mothers, especially when the mother is HIV-positive, as crucial PNC interventions are to be rendered to both the mothers and their infants (KoS, MoH 2010a:43). In this section, findings will be presented in the following sub-groups: vital signs, physical assessment, family planning and prophylactic treatment and adherence to treatment.

##### **4.13.1 Vital signs**

Vital signs are crucial indicators that enable health practitioners to determine the health status of mothers through assessing their temperature, pulse, respiration and blood pressure (Potter & Perry 2009:503); therefore, midwives are expected to measure and record vital signs with every PNC contact (KoS, MoH 2010a:44).

###### **4.13.1.1 Temperature**

A rise in the body temperature to 38 degrees Celsius is one of the early signs of puerperal infection (Murray & McKinney 2006:746). Of the 372 respondents involved in the current study, only 28.5% (n=106) had their temperature measured during the 6-week PNC visit. The majority (71.5%, n=266) were not assessed for their body temperature, putting them at risk of having undiagnosed puerperal infections.

###### **4.13.1.2 Pulse**

Measuring the pulse rate enables midwives to have clinical information about a client's cardio-vascular system, and any rise or elevation may indicate infection, anxiety and cardiac disease (Leifer 2008:231). Of all the respondents (N=372) who participated in this study, only 19.9% (n=74) had their pulse rate measured. The majority (80.1%, n=289) were never assessed for pulse rate. This is a large gap in the provision of PNC to HIV-positive mothers, indicating poor quality PNC rendered to mothers.

#### **4.13.1.3 Blood pressure**

Measuring women's blood pressure (BP) during the PNC visit enables midwives to ensure that postpartum pre-eclampsia is identified or ruled out. It is usual for maternal blood pressure to return to the normal range within 24 hours after birth (Fraser & Cooper 2009:659). Of all the respondents (N=372) who participated in this study, 80.4% (n=299) had their BP checked; the remaining 19.4% (n=73) were not assessed for their blood pressure.

#### **4.13.2 Physical assessment**

Quality physical assessment does not only enable midwives to have enough information about mothers, but it also helps midwives to identify complications such as anaemia (Murray & McKinney 2006:677) before such complications become life threatening (KoS, MoH 2010a:44). The Ministry of Health guidelines (KoS, MoH 2010a) state that midwives should take history, measure height and weight for mothers, assess women's nutritional status, and do pelvic examinations and cervical cancer screening. These variables were assessed as indicated in the following sub-sections.

##### **4.13.2.1 History taking**

Potter and Perry (2009:553) state that collection of a client's health history provides a clear picture of the clients and is important to give an overall picture of the well-being of the client. It is expected of midwives to take a comprehensive history, to ensure that maternal health status is established for good maternal health and to reduce chances of maternal deaths (ICM 2011:15). Of the 372 respondents involved in this study, 45.4% (n=169) had their health history collected during their 6-week postpartum visit, while the majority (54.6%, n=203) reported that no history was collected. This is a gap in the provision of quality PNC as the history enables a midwife to get information regarding the health status of post-natal women.

#### **4.13.2.2 Weight measurement**

People Living with HIV are prone to weight loss as one of the signs of nutritional depletion, which occur during HIV infection (KoS, MoH 2010f:109). During the initiation of ART, abnormal weight gain may occur as a consequence of ARV medication (Madec, Szumilin, Genevierb, Ferradinib, Balkan, Pujadese & Fontanet 2009:856). It is therefore important to measure weight in order to note the response of the client to the HIV infection and to measure the nutritional status of the women (Madec *et al.* 2009:860).

Of the respondents (N=372) who participated in this study, 59.4% (n=221) had their weighted measured; of the remaining 40.6% (n=151) weight was not measured.

#### **4.13.2.3 Nutrition assessment**

Nutrition is an important aspect of the care for a person with HIV at all stages of the infection (WHO stages 1, 2, 3 and 4) (KoS, MoH 2010f:22). Midwives should conduct nutrition assessment by means of the mid-upper arm circumference measurement (KoS, MoH 2010a:25), but in this study only 20.2% (n=75) were assessed for nutritional status. This gap in nutritional assessment indicates that HIV-positive women may have nutritional challenges and could therefore advance to AIDS without the appropriate interventions to curb the virus (KoS, MoH 2010f:109).

#### **4.13.2.4 Pelvic examination**

During the 6-week postpartum visit, midwives should perform a thorough pelvic examination to ascertain that the birth canal is healing well (KoS, MoH 2010a:44). However, in the current study, only 28.8% (n=107) of the respondents reported having had a pelvic examination. The majority (71.2%, n=265) were not offered this intervention to determine how the birth canal was recovering, indicating that sub-standard PNC were rendered.

#### **4.13.2.5 Cervical cancer screening**

Women infected with HIV have a higher prevalence of infection with the human papillomavirus, and are more vulnerable to develop persistent opportunistic infections with multiple human papillomavirus types, resulting in a higher incidence and prevalence of cervical intraepithelial neoplasia lesions. They are also more likely to progress faster to invasive cervical cancer than HIV-negative women (Chirenje 2005:270).

Cervical cancer screening should be performed during the 6-week PNC visit, especially in the case of HIV-infected women as they are more at risk of developing cervical cancer due to their compromised immunity (KoS, MoH 2010a:44; KoS, MoH 2010f:74). Of all the respondents (N=372) who participated in the current study and who were eligible to be screened for cervical cancer – according to the Ministry of Health (2010a:44), all HIV-positive women should be screened for cervical cancer at the 6-week PNC visit – only 17.7% (n=66) were offered cervical cancer screening. The majority (82.3%, n=306) were not screened for this life-threatening condition, revealing that midwives rendered sub-standard PNC.

#### **4.13.3.6 Condom supply**

Condoms, both male and female, are part of the preventive strategy for HIV infection and re-infection, because they prevent unplanned pregnancies and have the added advantage of preventing sexually transmitted infections (Leifer 2008:356–357). Midwives should not only educate mothers on the use and importance of condoms; they should supply them to women (KoS, MoH 2010a:45). Of all the respondents (N=372) who participated in the current study, only 40.1% (n=149) were offered condoms by midwives after finishing the PNC interventions; more than half (59.9%, n=233) were therefore not given condoms.

#### 4.13.4 Co-trimoxazole prophylaxis

Co-trimoxazole significantly reduces morbidity and mortality by preventing the occurrence of opportunistic infections among HIV-infected women. This medication should be taken for the rest of the patient's life and all HIV-positive women should be given co-trimoxazole, whether they receive ART or not (KoS, MoH 2010a:50). Of all the respondents (N=372) who participated in this study, 77.4% (n=288) were given co-trimoxazole to take once daily, while about 22.6% (n=84) were not provided with the co-trimoxazole prophylaxis, putting them at risk of developing preventable opportunistic infections.

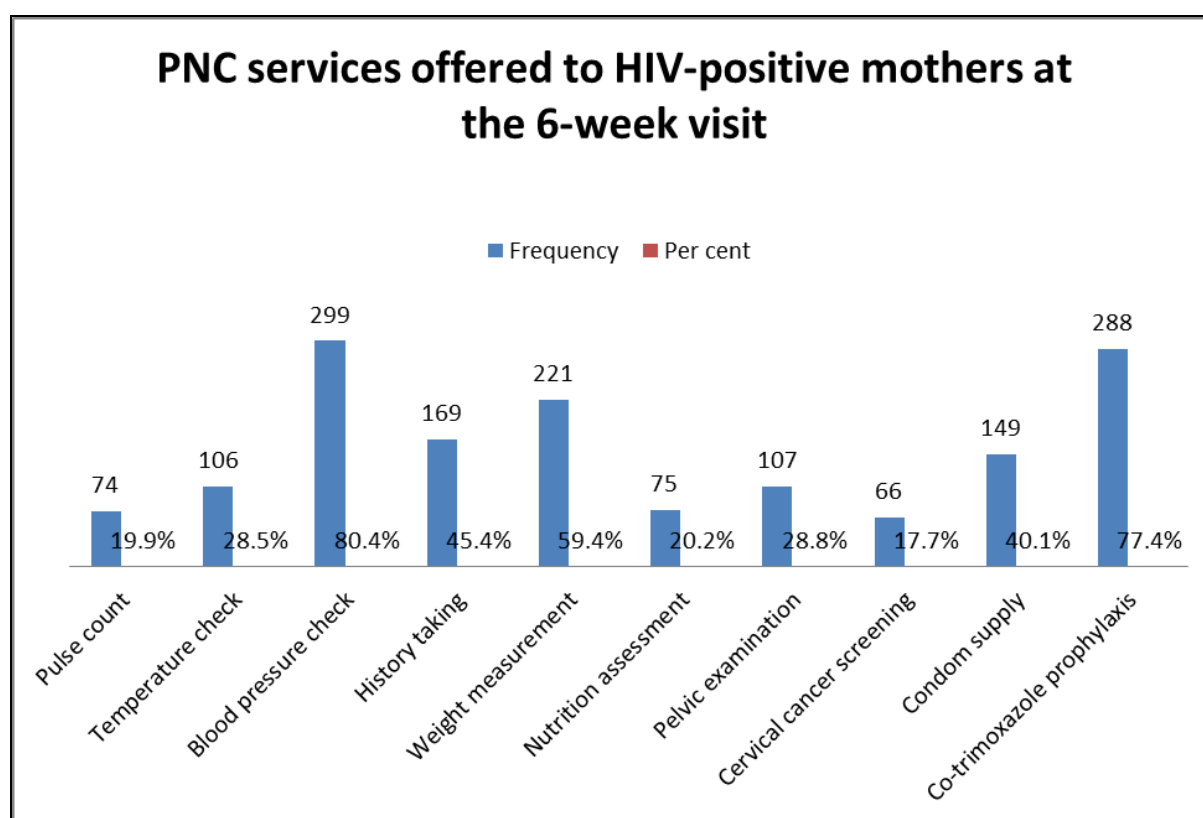


Figure 4.10 PNC services offered to HIV-positive mothers at the 6-week visit

#### 4.14 TUBERCULOSIS SCREENING AMONG HIV-POSITIVE MOTHERS

All HIV-positive post-natal mothers should be screened for pulmonary TB, by using the national TB screening tool (KoS, MoH 2010a:44). Of the 372 mothers taking part

in the current study, 96.5% (n=359) screened TB negative and 3.7% (n=13) screened TB positive.

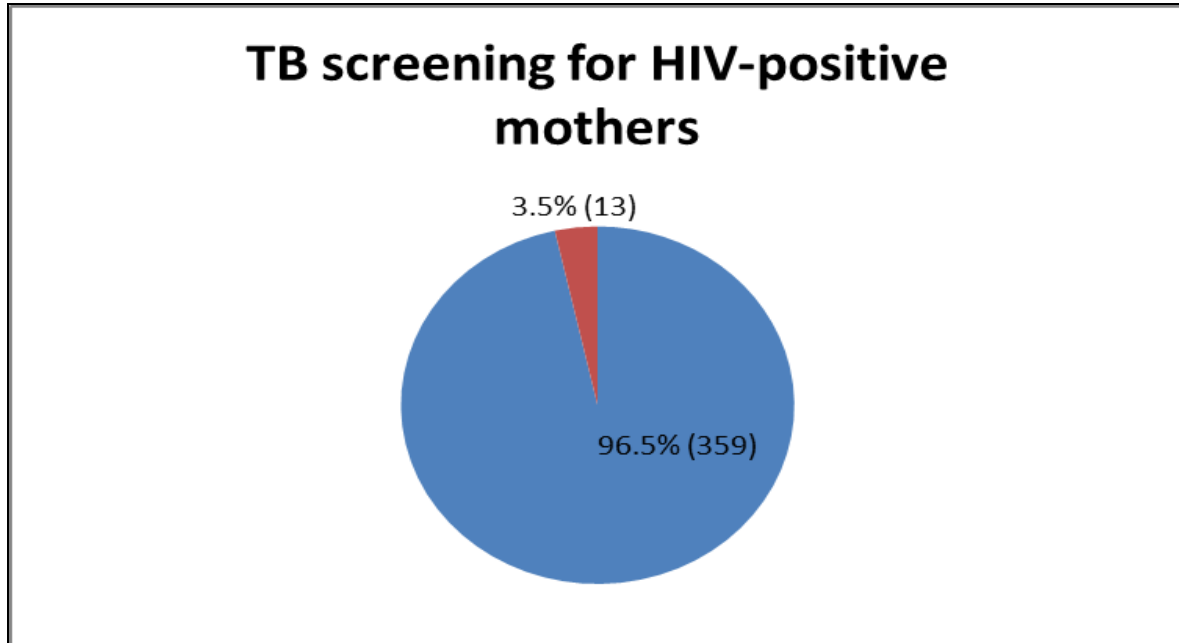


Figure 4.11 TB screening for HIV-positive mothers

#### **4.15 POST-NATAL CARE INFORMATION GIVEN TO HIV-POSITIVE MOTHERS AT THE 6-WEEK PNC VISIT**

Health education during provision of medical care is an integral component. This is also the case in PNC, where the mother is caring for herself and her infant (KoS, MoH 2010a:39). This subsection will reflect the results in the following sub-topics: safe infant feeding, counselling on resuming sexual activity, counselling on early infant diagnosis of HIV and appointment.

##### **4.15.1 Exclusive breastfeeding**

Exclusive breastfeeding is considered the safest infant feeding for all infants for the first six months (KoS, MoH 2010a:46). This is because breast milk does not cause allergic reactions, has immunologic properties that help in the prevention of infections, its composition meets the infant's specific nutritional needs, the milk is

easily digested and has nutrients that are well absorbed, namely protein, fat and carbohydrates which occur in the most suitable proportions, and it is unlikely to be contaminated (Murray & McKinney 2006:541). Of the 352 respondents who reported to have chosen exclusive breastfeeding, 97.4% (n=343) were counselled and supported on exclusive breastfeeding as a chosen infant feeding option, and 2.6% (n=9) were not offered this support, putting them at risk of practicing mixed feeding (breastfeeding and giving for supplements in the first six months of the baby's life).

#### **4.15.2 Exclusive replacement feeding**

Exclusive replacement feeding (not giving breast milk) is recommended by the WHO (2001:80) for mothers who are not willing to breastfeed, to ensure prevention of MTCT of HIV. However, mothers who practice exclusive replacement infant feeding should meet the acceptable, feasible, affordable, sustainable, safe (AFASS) criterion, which is an assessment tool for appropriateness of replacement infant feeding. Failure to meet this criterion for exclusive replacement feeding is considered not beneficial to the infant.

In the current study, of the 20 respondents who reported that they had chosen exclusive replacement, 85.0% (n=17) were provided with information on the practices (hygiene, cleaning of infant feeding materials, and milk preparation) to ensure that their infants remain healthy. The remaining 15.0% (n=3) were not offered this vital information, putting the infants in danger (like having diarrhoea due to a lack of hygiene practices).

#### **4.15.3 Counselling on resuming sexual activity**

HIV-positive women should be counselled on the time to resume sexual activity, in other words, when vaginal walls have healed, so as to help them avoid HIV re-infection, which might occur if they engage in sexual activities while there are vaginal tears or bruises which have not completely healed, which may further lower their



immunity (KoS, MoH 2010a:44). Of the 372 respondents, 71.8% (n=267) were educated on resuming sexual activity after complete healing of the vaginal wall, and 28.2% (n=105) were not offered this information, which placed them at risk of HIV re-infection.

#### 4.15.4 Counselling on early infant diagnosis of HIV and appointment for results

The Ministry of Health (KoS, MoH 2010a:54) states that midwives should collect infant blood samples by dried blood spot for HIV testing, polio, diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza type B. A follow-up appointment for results should be given to the mother to receive the HIV results for her baby. Of the 372 respondents, 93.3% (n=347) were counselled on the importance of early infant diagnosis (EID) of HIV through dried blood spot testing, and 78.2% (n=291) were given appointment dates for EID results.

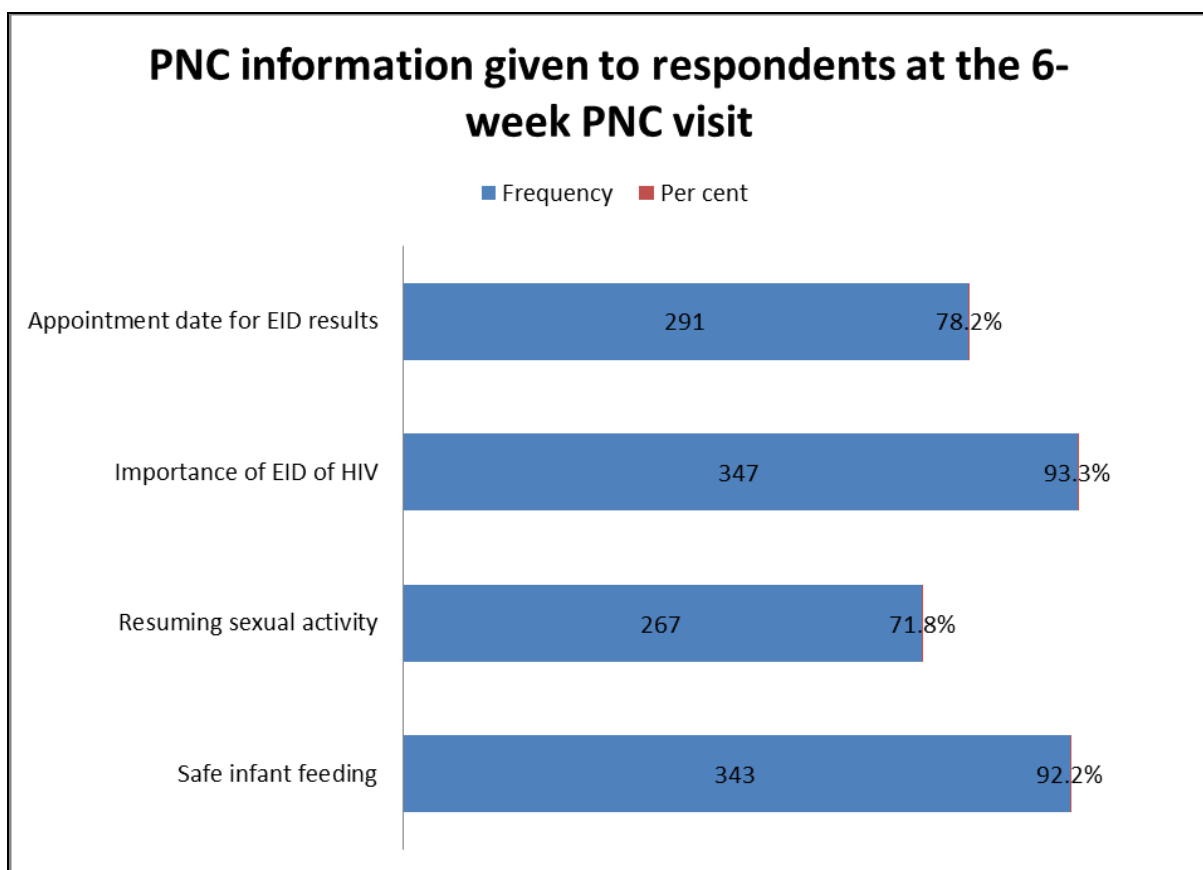


Figure 4.12 PNC information given to respondents at the 6-week PNC visit

## **4.16 HEALTH CARE PROVIDED TO HIV-EXPOSED INFANTS**

This part of the research study focuses on evaluation of care rendered to HIV-exposed infants and further presents the results of care provided to infants immediately after delivery, at discharge home, at the 3–14-day post-natal visits and at the 6-week post-delivery visit.

### **4.16.1 Care rendered to infants immediately after delivery**

Quality immediate care of the newborn should be rendered to ensure good adaptation to the external environment (KoS, MoH 2010a:36). In this section, the findings in the following sub-groups will be presented: physical assessment and prophylactic treatment.

#### **4.16.1.1 Physical assessment**

The ICM (2011:16) states that midwives should have the knowledge and understanding of elements of assessment of immediate conditions of the newborn (e.g. maintaining good temperature for the infant, cutting the umbilical cord and physical examination).

##### **4.16.1.1.1 Skin-to-skin contact**

Infants should be wiped to prevent heat loss by evaporation (as amniotic fluid evaporates from the skin) (Fraser & Cooper 2009:741) and to establish skin-to-skin contact with the mother, to maintain warmth by the process of induction (Fraser & Cooper 2003:741). The baby should be placed on the mother's abdomen immediately after delivery. This ensures that the maternal body heat will maintain the baby's temperature and it also promotes colonisation with the mother's innocuous skin organisms (Harrison 2010:26). This helps prevent hypothermia, which can be life threatening. Of the 372 infants, 45.2% (n=168) were placed on their mother's abdomen immediately after delivery. The majority (54.8%, n=204) were put at risk of

developing hypothermia, indicating that these infants received poor quality care, which is a gap in midwives' provision of care.

#### 4.16.1.1.2 Cord clamping

Midwives should clamp the cord immediately after birth to enhance the establishment of the extra-uterine circulatory system. Failure to do so may result in mixing of maternal and infant blood and enhancing MTCT of HIV (Harrison 2010:25). Of the 372 infants, 94.4% (n=351) had their umbilical cord clamped immediately after birth; the remaining 5.6% (n=21) had their umbilical cord not clamped immediately after delivery.

#### 4.16.1.1.3 Physical examination

Midwives are skilled professionals in the initial assessment of the newborn (ICM 2011:17). Of the 372 infants who were involved in this research, 69.1% (n=257) had undergone physical examination immediately after delivery, and 30.9% (n=115) did not undergo physical examinations, indicating a gap in the manner midwives provided care to infants.

#### 4.16.1.1.4 Breastfeeding initiation

Immediately after delivery mothers should be supported to initiate breastfeeding within the first 30 minutes of life (KoS, MoH 2010a:36). This establishes a pattern of suckling and also promotes the flow of colostrum (Harrison 2010:26). In this study, of the 372 infants involved in the study, 56.2% (n=209) were supported to initiate breastfeeding within one hour, but 43.8% (n= 163) were not supported to undertake this initiative. This indicates that there was a gap in the provision of medical care to the HIV-exposed infants in this regard.

#### 4.16.1.2 Prophylactic treatments

All infants, irrespective of HIV-exposure status should receive 1% tetracycline eye ointment, vitamin K 0.5 milligram injection as well as NVP prophylaxis immediately after delivery (KoS, MoH 2010a:36).

##### 4.16.1.2.1 Tetracycline eye ointment

Prophylaxis against eye diseases, such as gonorrhoea or Chlamydia, for all infants, irrespective of HIV exposure, is recommended, as the baby might be infected when passing through the infected birth canal (Leifer 2008:188; KoS, MoH 2010a:36). Therefore, midwives should provide 1% tetracycline eye ointment prevention against gonorrhoea or Chlamydia. Of the infants taking part in this study (N=372), 77.2% (n=287) were given the 1% tetracycline eye ointment immediately after delivery and 22.8% (n= 85) did not have the eye ointment administered.

##### 4.16.1.2.2 Vitamin K injection

Newborn s should receive vitamin K, intramuscularly in the mid-anterior thigh, where the muscle development is adequate, because they are deficient in clotting factors and vitamin K is administered as a prophylaxis to assist with clotting (Leifer 2008:187–188). The Ministry of Health (KoS, MoH 2010a:36) recommends that all infants be injected with vitamin K (0.5 milligram), to prevent clotting disorders (Leifer 2008:188). Of the 372 infants involved in this study, 79.6% (n=296) were injected with vitamin K 0.5 milligram, and 20.4% (n= 76) were not given this eye prophylaxis.

##### 4.16.1.2.3 Nevirapine prophylaxis administration

HIV-exposed infants should be initiated on NVP prophylaxis immediately after delivery. In the case of mothers on ART, their infants should receive NVP prophylaxis until six weeks, and mothers who received ARV prophylaxis while breastfeeding should take NVP until one week after breastfeeding has stopped (WHO 2010a:28). The Ministry of Health (KoS, MoH 2010a:36) adopted the same

recommendation, as it helps with lower the risk of MTCT of HIV. Of the 372 infants who were part of this study, 83.6% (n=311) were given NVP prophylaxis immediately after delivery, and 16.4% (n= 61) were not given this HIV prophylaxis, putting them at risk of HIV infection.

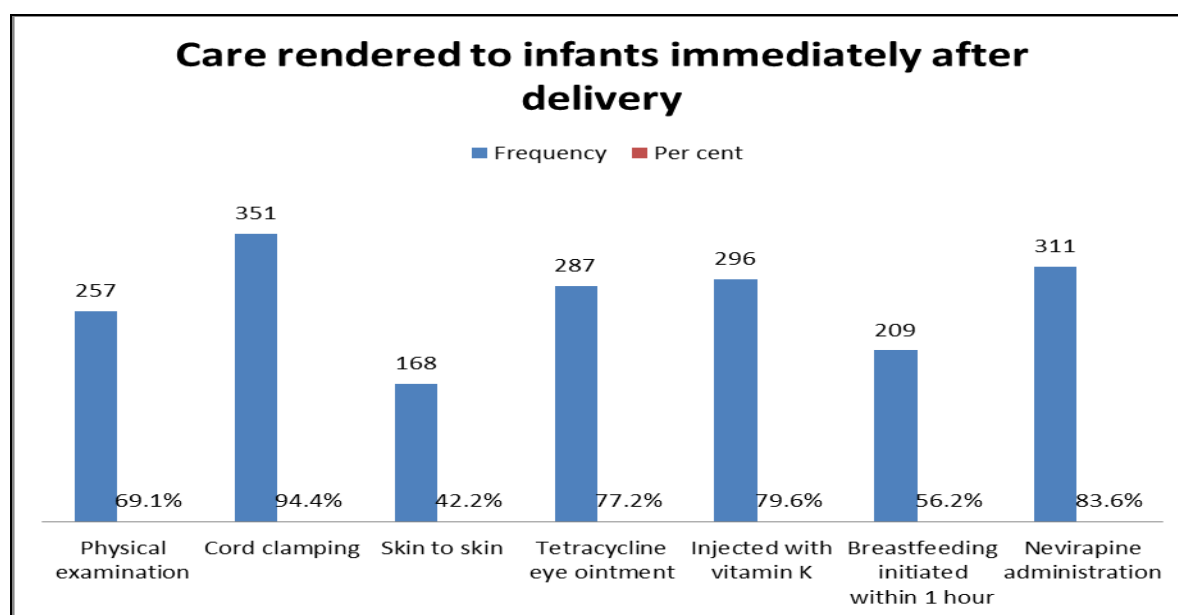


Figure 4.13 Care rendered to infants immediately after delivery

#### 4.16.2 Health information given concerning the baby

It is important for mothers to receive factual information from the midwife regarding the care of the baby. Failure to do so may result in morbidity and mortality. In the case of HIV-exposed infants, mothers should be counselled on early infant diagnosis, co-trimoxazole prophylaxis and be supported on the chosen infant feeding option (KoS, MoH 2010a:36). The findings will be presented as follows: supported on chosen infant feeding option, co-trimoxazole prophylaxis and early infant diagnosis of HIV.

#### **4.16.2.1 Supported on chosen infant feeding option**

Midwives should position infants to initiate breastfeeding as soon as possible after birth and they should support exclusive breastfeeding (ICM 2011:17). Furthermore, midwives should support mothers on their chosen infant feeding, to ensure uninterrupted infant feeding. It is the midwives' responsibility to educate mothers on principles of infant nutrition and infant feeding options. Of all the respondents (N=372) who participated in this study, 63.4% (n=236) reported to have been given information and support by midwives on their chosen infant feeding choice whether exclusive breastfeeding or exclusive replacement feeding. This implies that 36.6% (n=136) were not given any information and support on either exclusive breastfeeding or exclusive replacement infant feeding, putting them at risk of practicing mixed feeding, which enhances MTCT of HIV (KoS, MoH 2010a:46).

#### **4.16.2.2 Co-trimoxazole prophylaxis**

Co-trimoxazole prophylaxis significantly reduces morbidity and mortality by preventing opportunistic infections (KoS, MoH 2010f:15). All HIV-exposed infants should therefore be initiated on this medication at six weeks of age. Their mothers should be well informed on the co-trimoxazole prophylaxis early to promote adherence to it (KoS, MoH 2010a:50). Of the 372 respondents involved in this study, only 46.2% (n=172) were counselled on co-trimoxazole prophylaxis immediately after delivery, and the majority (53.8%, n=200) were not educated on this life-saving prophylaxis.

#### **4.16.2.3 Early infant diagnosis of HIV**

Early infant diagnosis (EID) is an entry point for HIV-exposed infants to be enrolled on ART if found HIV-positive early, thus reducing the risk of infant morbidity and mortality (KoS, MoH 2010a:54). Of the 372 respondents in this study, fewer than half (46.5%, n=173) were counselled on early infant diagnosis of HIV. This is a cause for concern as mothers should take their children to a healthcare centre once they

suspect abnormal symptoms in their babies, which might be suggestive of HIV infection.

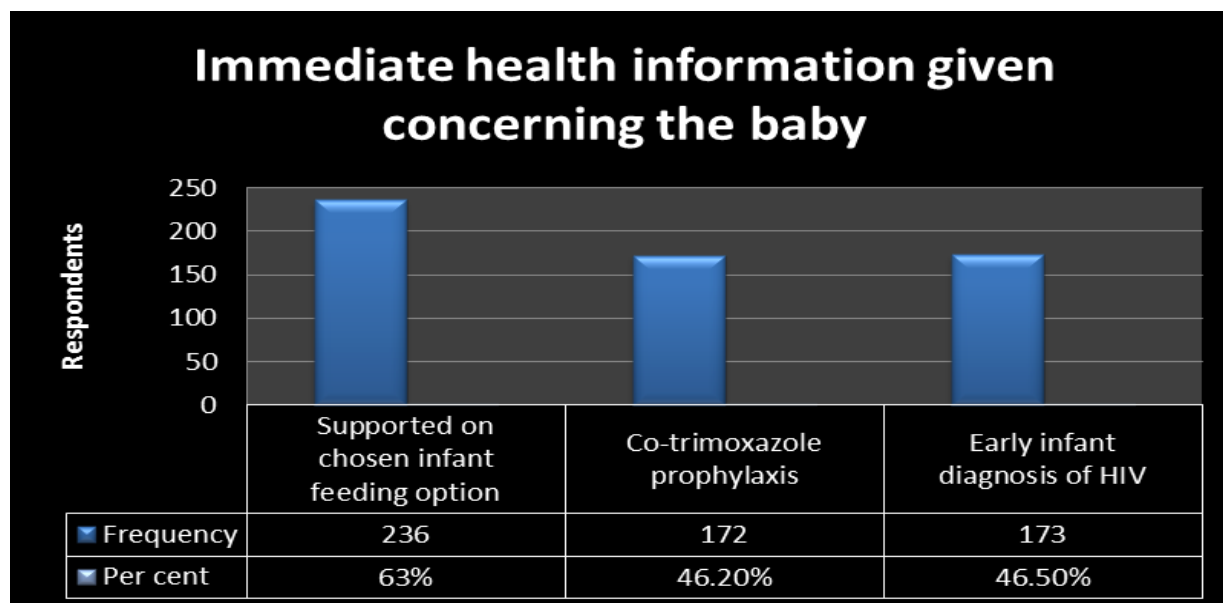


Figure 4.14 Immediate health information given concerning the baby

#### 4.16.3 Healthcare services provided to infants before discharge home

Quality care should be offered to all infants before they are discharged home, in order to prevent and manage risk conditions before they become life threatening to the infants. This study investigated the quality of PNC rendered to HIV-exposed infants. The results are presented below.

##### 4.16.3.1 Care rendered to infants on discharge home

The elements of assessment of infants and principles of newborn adaptation to extra-uterine life should be followed by midwives. This should be at all levels of contact, immediately after delivery, within the hospital, at discharge home, after 3–14 days and after six weeks (ICM 2011:16).

#### 4.16.3.1.1 Physical examination

A physical examination before discharging a neonate home is mandatory in order to rule out birth trauma, congenital disorders and infections that may occur (KoS, MoH 2010a:38). In this study, screening for risk conditions through a physical examination was conducted in the case of 44.9% (n=167) of the infants. The majority (55.1%, n=205) were not physically examined, and potential dangers and risks were not identified.

#### 4.16.3.1.2 Infant temperature and pulse

Harrison (2010:27) states that the infant's temperature should be measured and monitored to identify any health problems, which may include infection and failure of the infant to maintain a normal temperature, which may require prompt medical attention. This might help prevent hypothermia, which is life threatening to infants. The majority (70.2%, n=261) of infants' temperature was measured and recorded, while for only 32.5% (n=121) the pulse rate was measured.

#### 4.16.3.1.3 Immunisations

Universal immunisation of children against vaccine-preventable diseases is crucial to reduce infant and child mortality (KoS, CSO 2008:127). Of the 372 infants who were part of the current study, 96.0% (n=357) were immunised for TB using BCG vaccination, and 96.0% (n=357) infants were given polio drops.



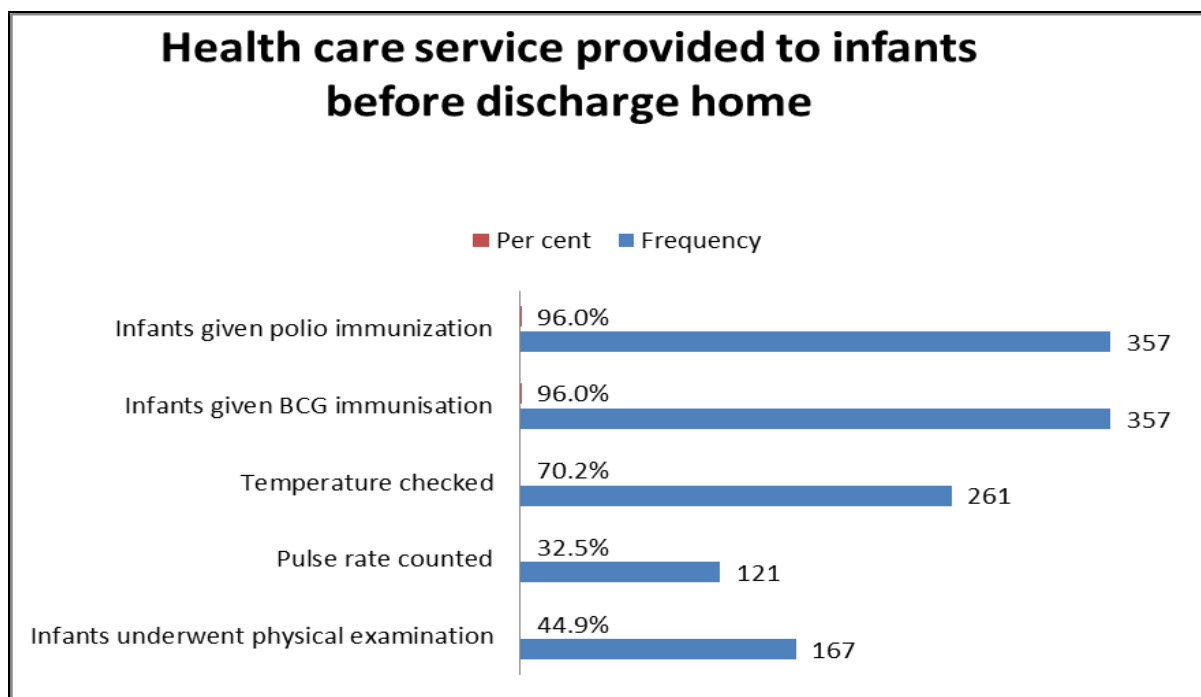


Figure 4.15 Health care service provided to infants before discharge home

#### 4.16.4 Information given on discharge home regarding infant care

Comprehensive care includes the provision of a factual message from midwives, to ensure that morbidity and mortality are reduced by all possible means. The study results in this section are presented in sub-groups: identification of danger signs, advice on immunisation, counselling on co-trimoxazole, advice on NV prophylaxis and counselling on infant feeding options.

##### 4.16.4.1 Newborn care counselling

Mothers should be educated on day-to-day care of the newborn by midwives, to ensure that appropriate care is taken of the baby as it adapts to extra-uterine life, thus reducing risks of morbidity and mortality (ICM 2011:17). In this study, more than half of the respondents (55.9%, n=208) were counselled on newborn care, while the remaining 44.1% (n=164) were not counselled on newborn care.

#### **4.16.4.2 Infant danger signs**

Education of mothers about infants' danger signs, to help mothers know when to seek medical care for the infant, is part of the essential competencies of midwives (ICM 2011:17). These danger signs are discussed in the paragraphs below.

##### **4.16.4.2.1 Hypothermia**

Midwives should counsel mothers on how to promote and maintain normal newborn temperature, because of the infant's poor ability to produce heat and maintain a normal body temperature through covering (blanket or cap), environmental control and promotion of skin-to-skin contact (Leifer 2008:158). Of the 372 respondents, 41.9% (n=156) were counselled on hypothermia, while the majority (58.1%, n=216) reported that they were not educated on hypothermia, indicating a significant discrepancy in the quality of PNC rendered.

##### **4.16.4.2.2 High respiratory rate**

Mothers should be made aware of the predisposing factors and the likelihood of respiratory problems to newborns, as any respiratory disorder can be fatal, because the infant has just initiated breathing on his or her own (Cooper & Fraser 2009:750). Therefore, midwives should counsel mothers on monitoring of the infant's respiratory rate. Any change, especially a high respiratory tempo may indicate a serious problem and could require urgent medical care. Of the 372 respondents, only 35.5% (n=132) were counselled on high respiratory rate of the infant. The majority (64.5%, n=240) were not made aware of this likelihood, indicating sub-standard PNC.

##### **4.16.4.2.3 Fever**

Murray and McKinney (2006:892) state that an increase in the newborn infant's body temperature may indicate an infection or ineffective thermoregulation related to systemic infection. Mothers should be counselled on fever as a sign of possible life-threatening complications. This points to the need for taking infants promptly for medical interventions. Midwives are to educate mothers on this danger sign, as it

can be fatal. In this study, 53.2% (n=198) of the respondents were counselled on the life-threatening effects of fever on their infants lives, and the remaining 42.8% (n=174) were not provided with information related to the danger of fever for their infants.

#### 4.16.4.2.4 Infant refusal to feed

Adaptation to the extra-uterine life involves daily feeding by mouth. Any change from the normal infant feeding pattern may indicate a serious health problem for the baby (Fraser & Cooper 2009:756). Mothers should be counselled on the importance of daily monitoring of the infant's feeding pattern. In this study, of the 372 respondents who participated, only 37.1% (n=138) were counselled on the importance of monitoring their infants' feeding pattern, so that any alteration in their infants' feeding pattern, such as refusal to feed, could be determined early. Refusal to feed may be suggestive of infection, which requires urgent medical intervention (Leifer 2008:332). The majority (62.9%, n=234) were not educated on the importance of monitoring their infants' feeding pattern.

#### 4.16.4.2.5 Septic umbilical cord

Infection of the umbilical cord or stump may be fatal, and if not it does not receive quality attention urgently, this may result in the death of the infant, as it may be as sign of ascending infection (Fraser & Cooper 2009:837). Mothers should be very alert and diligent in monitoring and cleaning of the umbilical cord. In the current study, 68.0% (n=253) of the respondents were counselled on the danger of a septic umbilical cord while the remaining 32.0% (n=119) were not given information on the importance of monitoring and cleaning of the cord to prevent a septic umbilical cord and to seek medical help urgently whenever they notice periumbilical redness or a discharge (Fraser & Cooper 2009:837).

#### 4.16.4.3 Advised on the 6-weeks immunisation schedule

Infants should be immunised against vaccine-preventable diseases according to the national expanded programme for the immunisation schedule. Regardless of their HIV exposure status, mothers should be informed about the immunisation schedule, especially for the primary immunisations, which are at 6 weeks, 10 weeks and 14 weeks. Dates for next immunisation should be recorded in the child's health card (KoS, MoH 2010a:38). Of all the respondents (N=372), 92.7% (n=345) were advised on the national 6-week immunisation schedule and the remaining 6.3% (n= 27) were not given information on the 6-week immunisation schedule, where infants are vaccinated against polio, diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza type B.

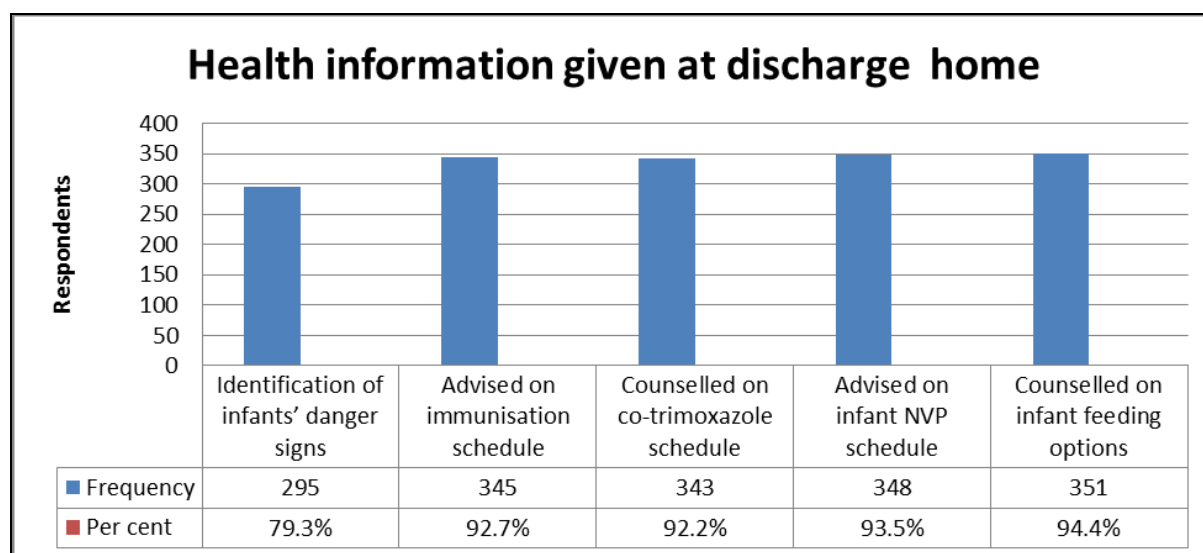


Figure 4.16 Health information given at discharge home

#### 4.17 HEALTHCARE SERVICES PROVIDED TO INFANTS AT 3–14-day visit

Healthcare workers should always remain vigilant for signs and symptoms of HIV infection in all exposed infants, during all contacts (KoS, MoH 2010a:51). Sub-groups will be used to present the findings in the following way: physical

examination, infant feeding practice enquiry, enquiry about medication given to infants immediately after birth, infants weighed, vital signs and infant NVP given.

#### **4.17.1 Vital signs**

Leifer (2008:165) states that the infant's vital signs should be taken when the infant is quiet. These provide baseline information on how the infant is adapting to the extra-uterine life or environment.

##### **4.17.1.1 Pulse rate count**

It is crucial that the heart rate of the infant be closely monitored, so as to monitor how the infant adapts to the extra-uterine life or environment. Of the 372 infants who were part of this research, only 6.7% (n=25) had their pulse rate counted at the 3–14-day PNC visit. Compromised quality PNC was thus rendered, as the majority (93.3%, n=347) were not assessed for their heart rate as a monitoring strategy for extra-uterine adaptation.

##### **4.17.1.2 Respiration**

Infants' respiration should be counted and recorded half-hourly, to determine respiratory distress, which needs urgent investigation and treatment (Harrison 2010:27). In this study of the 372 infants, only 5.4% (n=20) had their breathing rate counted at the 3–14-day PNC visit. The majority (94.6%, 352) were not assessed for extra-uterine adaptation, indicating that a dangerous gap and poor quality of care rendered by midwives.

##### **4.17.1.3 Temperature**

Owing to the immaturity of the hypothalamus, temperature regulation is inefficient and the baby remains vulnerable to hypothermia. Midwives should measure the infants' temperature with every contact, to identify potential risks like infection

(Fraser & Cooper 2009:765). Of the 372 infants who were part of the current research, 61.8% (n=230) had their temperature measured during the 3–14 day PNC visit, and 38.2% (n=142) had their temperature not measured, which might have led to infants being discharged home with undiagnosed abnormal body temperatures.

#### **4.17.1.4 Weight**

Measurement of weight is a clinical tool to assess the infant's growth, and this should be done with every contact to identify and manage growth-related disorders, like failure to thrive (Harrison 2010:26). Lowdermilk and Perry (2006:564) state that the infant's birth weight should be regained within two weeks and should be less than or equal to 10%. Of the 372 infants who were part of the current research, 65.1% (n=242) were weighed during the 3–14 day PNC visit, and the remaining 34.9% (n=130) were not weighed, depriving these infants of a baseline assessment, which would assist with future development assessments (Fraser & Cooper 2009:769).

#### **4.17.2 Physical examination**

It is the midwife's role to perform a physical examination of the infant with every contact, for prevention and management of identified neonatal complications, such as fever, diarrhoea, pneumonia and tuberculosis (African Network for the Care of Children Affected by HIV/AIDS (ANECCA) 2011:62–63). With every contact with midwives, infants should be physically examined. In the current study, more than half (54.6%, n=203) of the 372 infants who were part of this research underwent physical examinations, and about 45.4% (n=169) were not offered this clinical intervention.

#### **4.17.3 Infant Nevirapine given**

All infants born to HIV-infected mothers should be given NVP prophylaxis for at least six weeks (in the case of mothers who are on ART), and until one week after cessation of breastfeeding (in the case of mothers who receive ARV prophylaxis) (KoS, MoH 201a:49). Of the 372 infants who were part of the current research, the majority (91.7%, n=341) were given NVP prophylaxis and about 8.3% (n=31) were

not offered this HIV prophylaxis, putting them at risk of acquiring HIV (WHO 2010a:36).

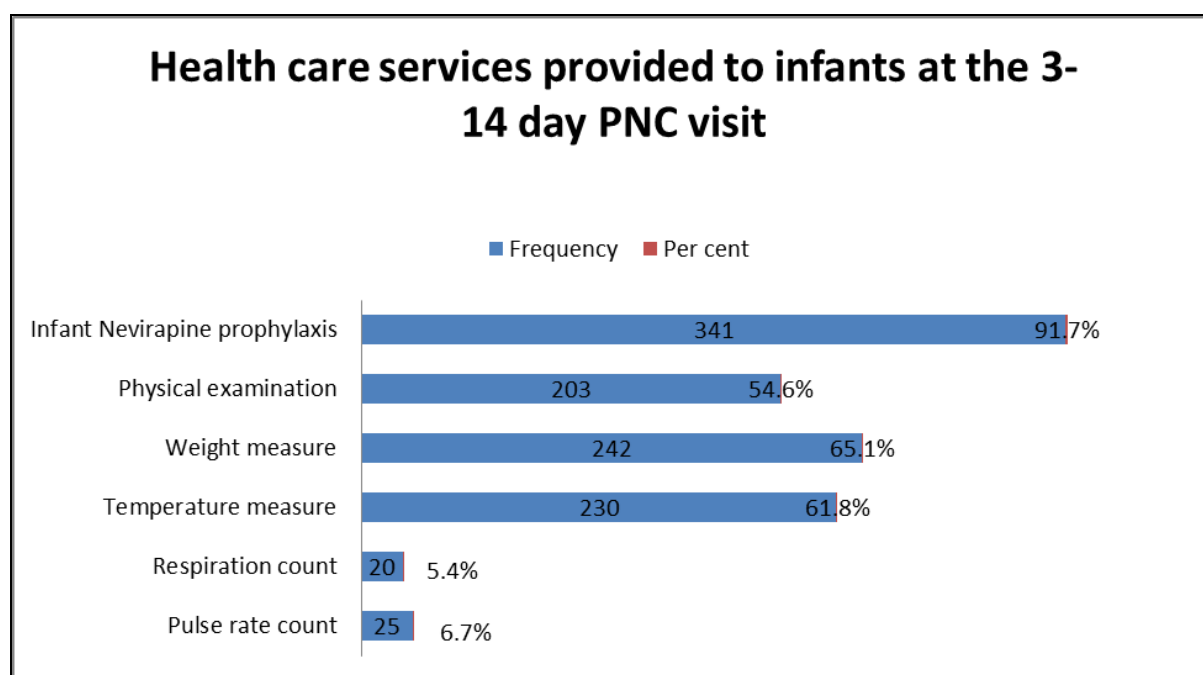


Figure 4.17 Services provided to infants at 3–14 days after delivery

#### 4.18 HEALTHCARE SERVICES RENDERED TO INFANTS AT THE 6-WEEK VISIT

The quality of care provided to infants at the 6-week post-delivery visit is crucial, especially in the case of HIV-exposed infants, as there are medical interventions that need to be done specifically at this time (DBS and co-trimoxazole prophylaxis) (KoS, MoH 2010a:44–45). The current research project evaluated the quality of care rendered to the infants. Results in the following sub-groups are presented in the paragraphs below: vital signs, prophylactic treatment, infant feeding option counselling, immunisation and physical examination.

### **4.18.1 Vital signs**

#### **4.18.1.1 Temperature**

Infants' temperature should be measured with every midwife contact to help identify signs of infection, such as unexplained persistent fever above 37.5 degrees Celsius (intermittent or constant) (ANECCA 2011:82), before they can become a threat to life. Midwives should therefore measure the babies' temperature (Harrison 2010:27). In this study, of the 372 HIV-exposed infants who were part of the study, 48.9% (n=182) had their temperature checked at the 6-week PNC visit. As many as 51.1% (n=190) of the infants did not have their temperature taken, indicating a gap in the manner midwives offered care to these infants.

#### **4.18.1.2 Pulse**

It is crucial that the heart rate of the infant be closely monitored, to evaluate the infant adaptation process to the extra-uterine life (Fraser & Cooper 2003:633). Of the 372 HIV-exposed infants who were part of the study, 3.0% (n=11) had their pulse rate counted during the 6-week PNC visit. The majority of infants (97.0%, n=361) did not have their pulse rate assessed, indicating a gap in the provision of care.

#### **4.18.1.3 Respiration**

One of the basic needs of an infant is initiation and maintenance of respiration (Fraser & Cooper 2009:765). Midwives should monitor the quality of respiration, as HIV-exposed infants may have aspirated HIV-contaminated amniotic fluid (London *et al.* 2007:772). Of the 372 HIV-exposed infants who were part of the study, 2.4% (n=9) had their respiration counted during the 6-week PNC visit. The majority (97.6%, n=363) were not assessed for this, indicating that midwives need to address the poor quality of care rendered to infants during this critical time of adaptation to the extra-uterine environment urgently.



#### **4.18.1.4 Weight**

Weight is an important baseline measure for an HIV-exposed baby in order to identify failure to thrive, which is a common feature among babies who have acquired MTCT of HIV (ANECCA 2011:80). Therefore, infants' weight measurement is an indicator of growth and development (Fraser & Cooper 2009:769). Of the 372 HIV-exposed infants who were part of the study, 91.9% (n=342) had their weight measured and the remaining 8.1% (n=30) were not weighed during the 6-week PNC visit.

#### **4.18.2 Physical examination**

Conducting physical examination of infants enables midwives to have comprehensive clinical information about the infant adaptation to the extra-uterine environment (Beck, Ganges, Goldman & Long 2004:33). In this study, of the 372 HIV-exposed infants who were part of the study, 69.1% (n=257) underwent physical examinations during the 6-week PNC visit. This indicates that midwives rendered compromised care to about 38.9% (n=115) HIV-exposed infants, who were at risk of developing opportunistic infections such as persistent or recurrent diarrhoea, pneumonia and persistent or recurrent fever and herpes zoster (ANECCA 2011:80).

#### **4.18.3 Immunisation**

Universal immunisation of children against vaccine-preventable diseases is crucial to reduce infant and child mortality (KoS, CSO 2008:127). Of the 372 HIV-exposed infants who were part of the study, 96.0% (n=357) were given the initial immunisation (polio, diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza type B) according to the Swaziland Ministry of Health policy on immunisation (2010a:36). About 4.0% (n=15) of the infants were not immunised against the vaccine-preventable diseases.

#### **4.18.4 Infants initiated on co-trimoxazole**

Co-trimoxazole significantly reduces morbidity and mortality by preventing opportunistic infections such as *Pneumocystis jirovecii* and other pneumonias, toxoplasmosis, bacterial infections and diarrhoea (WHO 2006:8). HIV-exposed infants should be counselled and initiated on co-trimoxazole at six weeks of age (KoS, MoH 2010a:50). Of the 372 HIV-exposed infants who were part of the study, 92.2% (n=343) were initiated on co-trimoxazole prophylaxis during the 6-week PNC visit. About 7.8% (n=29) were not initiated on the co-trimoxazole prophylactic treatment. This situation is likely to increase their vulnerability of acquiring opportunistic infections (WHO 2006:8).

#### **4.18.5 Infants tested for HIV**

HIV-exposed infants should be tested for HIV as early as six weeks after birth, using the antigen-based HIV test (dried blood spot), to determine the definite HIV status for the infant, in order to start the necessary ART interventions and prevent HIV-related morbidity and mortality (KoS, MoH 2010a:54). Of the 372 HIV-exposed infants who were part of the study, 93.0% (n=346) were tested for HIV during the 6-week PNC visit, and about 7.0% (n=26) were not tested for HIV.

#### **4.18.6 Infants given Nevirapine prophylaxis**

Infants born to HIV-infected mothers should receive NVP prophylaxis for a period of six weeks if mothers are on ART, and until one week after cessation of breastfeeding in the case of mothers who received ARV prophylaxis (KoS, MoH 2010a:49). Of the 372 HIV-exposed infants who were part of the study, 94.4% (n=351) received NVP prophylaxis during the 6-week PNC visit, and the remaining 5.6% (n=21) were not given NVP prophylaxis.

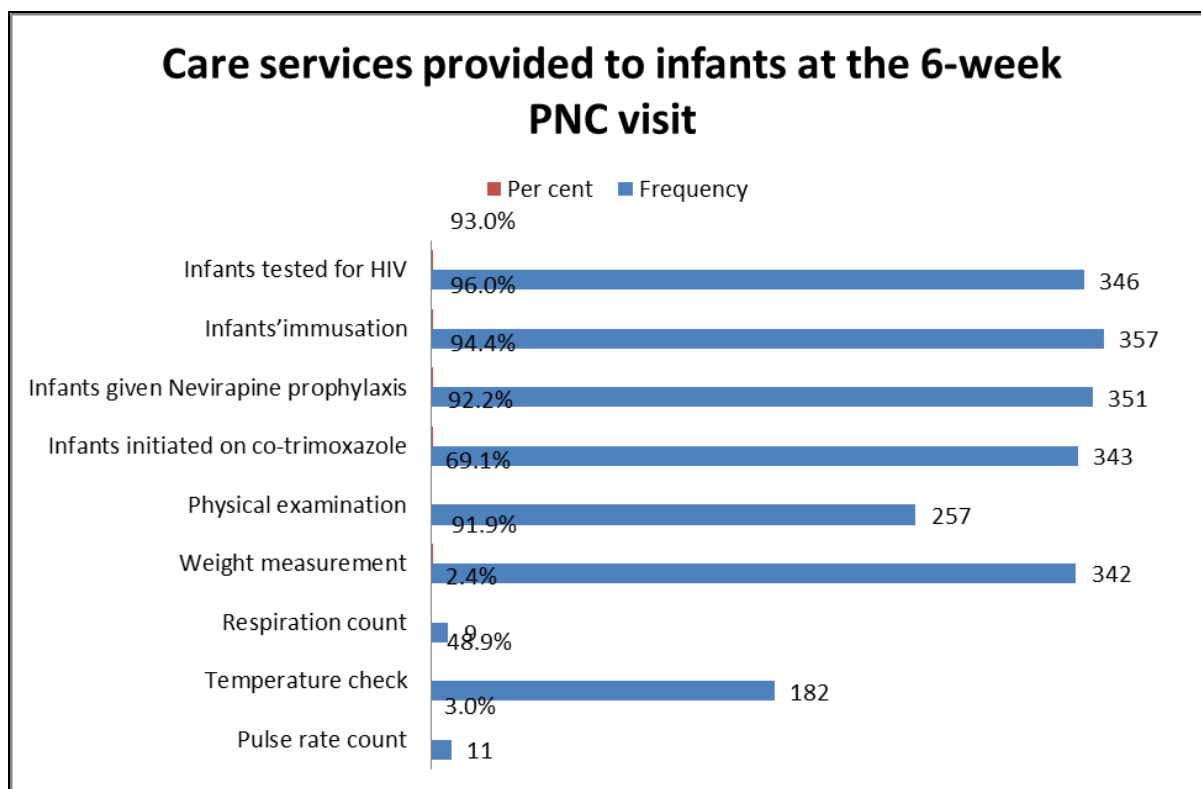


Figure 4.18 Care services provided to infants at the 6-week PNC visit

#### 4.19 INFANTS GIVEN ISONIAZID PROPHYLACTIC THERAPY (IPT)

Infants with household TB-active contacts should be given IPT for 6 months after active TB infection has been excluded, as a prophylactic measure against TB, thus reducing infant morbidity and mortality. This approach is in line with the Swaziland National Guidelines of the Ministry of Health (KoS, MoH 2010a). In this study, of the 13 mothers who were TB-smear positive, only 44.4% (n=4) were given the IPT for their infants while 53.6% (n=5) were eligible for this prophylaxis but were not given the medication, thus exposing their infants to TB (ANECCA 2011:61).

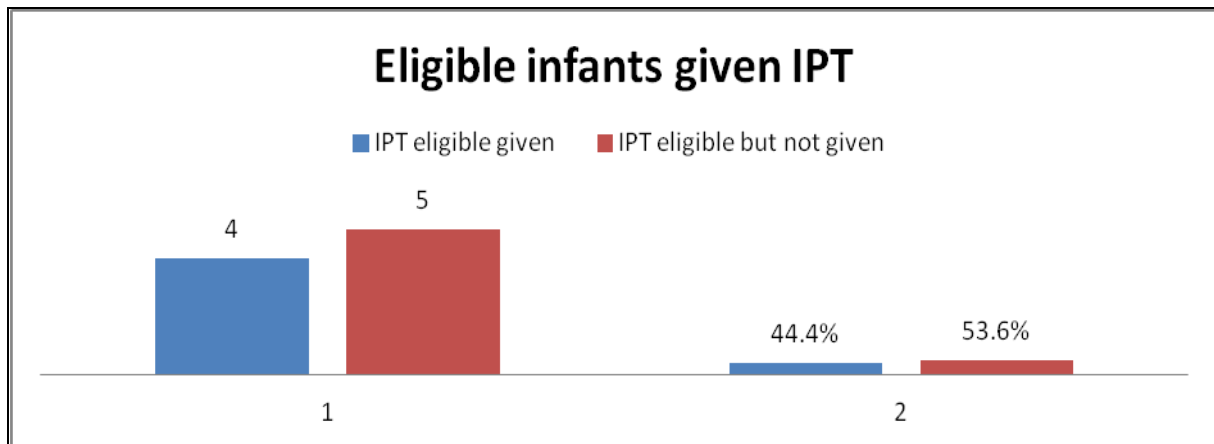


Figure 4.19 Eligible infants given IPT

#### 4.20 WAITING TIME BEFORE BEING ATTENDED BY MIDWIVES

Time spent while waiting for PNC services is important in determining the uptake of health services (Conner-Spady, Sanmugasunderam, Courtright, McGurran & Noseworthy 2004:1306). This study investigated the time spent by respondents before being attended by midwives. The results revealed that as many as 45.6% (n=177) of the respondents waited for more than an hour before being attended by midwives, 29.0% (n=108) waited for more than thirty minutes but less than an hour, and 23.4% (n=87) waited for less than thirty minutes.

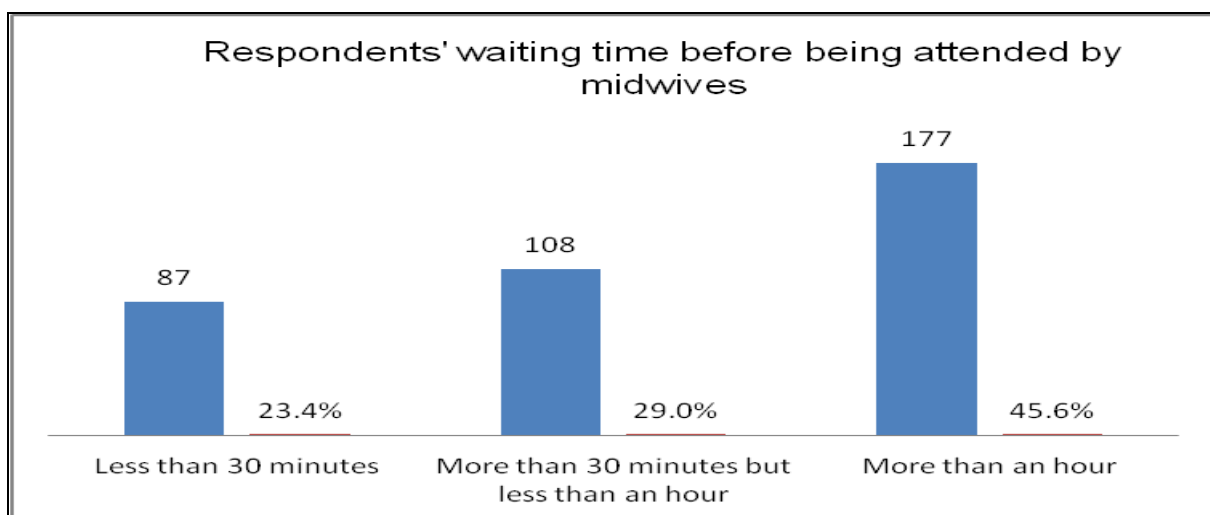


Figure 4.20 Respondents' waiting time before being attended by midwives

## 4.21 MOTHERS' PERCEPTIONS ON POST-NATAL CARE SERVICES

The way mothers view PNC services has influence on honouring appointments. In this study, mothers' satisfaction, the extent of mothers' expectations met, benefits of PNC, willingness to encourage other HIV-positive mothers to attend PNC visits, understanding of MTCT of HIV and future attendance of PNC should they have babies, were studied. The results are presented are detailed in the paragraphs below.

### 4.21.1 Respondents' satisfaction with post-natal care

A Likert scale was used to measure patients' satisfaction with the PNC services rendered to them. The majority (86.3%, n=321) of the respondents were satisfied with PNC services and information rendered, while 10.8% (n=40) reported that they were not satisfied with PNC services offered to them, and 3.0% (n=11) reported to be neither satisfied nor dissatisfied with the PNC services rendered to them.

Table 4.6 Respondents' satisfaction with PNC

<b>Respondents' PNC satisfaction</b>	<b>Frequency</b>	<b>Per cent</b>
Satisfied	321	86.3%
Not satisfied	40	10.8%
Neutral	11	3.0%
<b>Total</b>	<b>372</b>	<b>100.0%</b>

### 4.21.2 Respondents expectations of PNC

The extent to which individual's expectation were met by the PNC received was investigated. The results showed that –

- 36.6% (n=136) of the respondents agreed that their expectations had been met;
- 2.4% (n=9) disagreed that their expectations had been met;
- 4.1% (n=15) were neutral;
- 51.3% (n=191) strongly agreed that their expectations had been met; and
- 4.6% (n=17) strongly disagreed that their PNC expectation had been met.

#### 4.21.3 Respondents' views on the importance of post-natal care

The perspective of the respondents on the importance of PNC was investigated in this study. Table 4.7 displays the views of the respondents on the importance of PNC. Of the 372 respondents, 95.7% (n=356) agreed, 3.5% (n=13) disagreed, and 0.8% (n=3) were neutral about the question whether PNC is important for both the mother and the baby.

Table 4.7 Respondents' views on the importance of post-natal care

Respondents view on PNC	Frequency	Per cent
Agree	356	95.7%
Disagree	13	3.5%
Neutral	3	0.8%
Total	372	100.0%

#### 4.21.4 Respondents' view of encouraging other HIV-positive mothers to attend PNC clinics

People living with HIV should be supported and encouraged and provided with quality care, in order to encourage others to participate in this life saving-strategy in order to reduce both maternal and infant morbidity and mortality (KoS, MoH

2010a:21). More than half of the respondents (59.0%, n=217) strongly agreed that they would encourage other HIV-positive mothers to attend PNC, 34.2% (n=126) agreed, 1.4% (n=5) disagreed, 2.7% (n=10) were neutral, and 2.7% (n=10) strongly disagree that they would encourage other HIV-positive mothers to attend PNC.

Table 4.8 Respondents' willingness to encourage other HIV-positive women to attend PNC clinics

<b>Respondents' willingness to encourage HIV-positive mothers to attend PNC clinics</b>	<b>Frequency</b>	<b>Per cent</b>
Agree	126	33.9%
Disagree	5	1.3%
Neutral	10	2.7%
Strongly agree	221	59.4%
Strongly disagree	10	2.7%
<b>Total</b>	<b>372</b>	<b>100.0%</b>

#### 4.21.5 Respondents' understanding of mother-to-child-transmission risk

For good adherence to prophylaxis, these may include co-trimoxazole, IPT and ARV prophylaxis. The importance of the prophylaxis treatment to both mother and infant, and attendance of appointments should be emphasised and mothers should be educated and counselled on all the care they are receiving (KoS, MoH 2010a:21). The majority of mothers in the current study (61.8%, n=230) strongly agreed that after receiving PNC services and information they understood clearly the risk of MTCT of HIV, 34.2% (n=126) agreed, 0.8% (n=3) disagreed, 1.1% (n=4) were neutral, and 2.4% (n=9) strongly disagreed.

Table 4.9 Respondents' understanding of MTCT risk

<b>Respondents' understanding of MTCT of HIV</b>	<b>Frequency</b>	<b>Per cent</b>
Agree	126	33.9%
Disagree	3	0.8%
Neutral	4	1.1%
Strongly agree	230	61.8%
Strongly disagree	9	2.4%
<b>Total</b>	<b>372</b>	<b>100.0%</b>

#### 4.21.6 Respondents' willingness to attend PNC visits in the future

Adequate knowledge should be imparted to HIV-positive mothers and myths and false statements be cleared to ensure that mothers are empowered with knowledge related to PNC (ANECCA 2011:65). In this current study of 372 respondents, 31.7% (n=118) agreed, 0.3% (n=10) disagreed, 0.3% (n=1) was neutral, 63.4% (n=236) strongly agreed and 4.3% (n=16) strongly disagreed that if they should give birth again they would also attend PNC visits again.



Table 4.10 Respondents' willingness to attend PNC visits in the future

<b>Respondents' willingness to attend PNC visits in the future</b>	<b>Frequency</b>	<b>Per cent</b>
Agree	118	31.7%
Disagree	1	0.3%
Neutral	1	0.3%
Strongly agree	236	63.4%
Strongly disagree	16	4.3%
<b>Total</b>	<b>372</b>	<b>100.0%</b>

## 4.22 REASONS FOR ATTENDING POST-NATAL CARE SERVICES

The reasons or factors that motivated the 372 respondents to attend PNC visits were investigated. In this section, the results will be presented in the paragraphs below.

### 4.22.1 Seeking health and growth monitoring

According to Potter and Perry (2009:70), health beliefs influence health behaviour. These can positively or negatively affect an individual's health-seeking behaviour. Positive health behaviours include immunisations, attendance to health appointments like PNC visits and talks on nutrition. Negative health impacts include non-adherence to prophylactic treatment and non-attendance of health appointments (Potter & Perry 2009:70). In this study, 26.6% (n=99) of the respondents attended PNC clinics because they wanted to monitor the health and growth of their babies.

#### **4.22.2 Health educations from midwives**

One of the roles of a midwife is to be an educator (Murray & McKinney 2006:25). The education that midwives rendered to the respondents motivated 13.4% (n=50) to attend PNC appointments in order to help monitor the mothers' health status and that of their infants, while the other respondents attended PNC services for different reasons as indicated below.

#### **4.22.3 Infants' immunisations**

Universal immunisation of children against vaccine-preventable diseases is crucial to reduce infant and child mortality (WHO 2006:6). Immunisation is being promoted by the Swaziland Expanded Programme on Immunisation KoS, MoH 2010a:53). The programme provides a guideline for immunisation schedule, including 6-week immunisation which includes polio, diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza type B. Of the 372 respondents, 31.8% (n=118) came for PNC solely for their infants' immunisation.

#### **4.22.4 Infants' HIV testing**

Early infant diagnosis of HIV is a new approach aimed at determining infants' HIV status early and to initiate treatment of HIV-positive infants, thus lowering infant mortality rate (IMR) related to HIV infection (ANECCA 2011:77). Of the 372 mothers, 8.6% (n=32) came because they wanted their babies to be tested for HIV.

#### **4.22.5 Prevention of MTCT of HIV**

Every HIV-positive mother who had been given enough information on PMCT of HIV desires to nurse an HIV-negative baby (ANECCA 2011:37–38). In the current study, 19.6% (n=73) of the 372 respondents who came for PNC services, reported to have attended PNC visits in order to reduce the chances of MTCT of HIV. Figure 4.22 displays the overall reasons for attending PNC services.

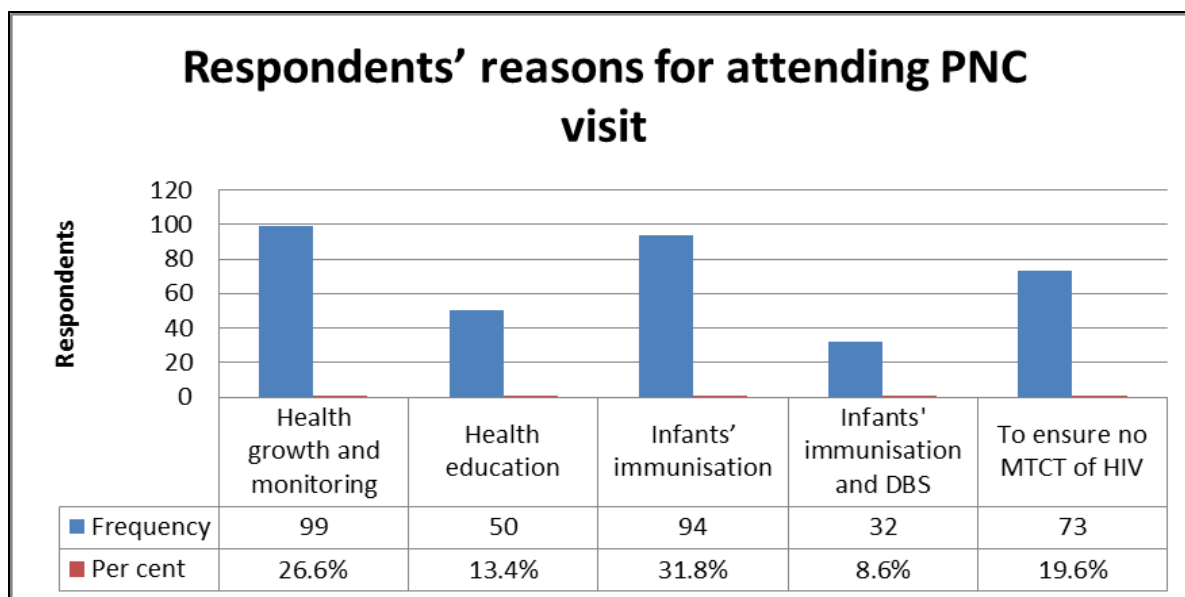


Figure 4.21 Respondents' reasons for attending PNC visits

#### **4.23 POSSIBLE BARRIERS TO POST-NATAL CARE ATTENDANCE AMONG HIV-POSITIVE MOTHERS**

Factors that may hinder HIV-positive mothers from attending PNC clinics were investigated. Table 4.22 displays the possible barriers as reported by the respondents. Results are discussed in the paragraphs below.

##### **4.23.1 Midwives' negative attitude**

The attitude of midwives has an influence on the uptake of health services, including PNC (Kebaabetswe 2007:358). In this study, of the 372 respondents, 16.7% (n=62) stated that midwives' negative attitude was regarded as a possible barrier towards their attendance of PNC services.

##### **4.23.2 Fear of HIV testing and counselling and possible HIV-positive status of the baby**

According to the Ministry of Health (KoS, MoH 2010a:20), an HIV-positive test is received with mixed emotions and uncertainty. This proved to be a contributing factor towards the low uptake of HIV testing services (Kebaabetswe 2007:358). Of the 372

respondents, 9.4% (n=35) reported fear of testing for HIV. Fear was based on coping with raising an HIV-positive infant. This was perceived as a deterrent for having the infant tested for HIV.

#### **4.23.3 Mothers' lack of knowledge**

Knowledge enables mothers to understand the importance of medical intervention, including PNC services (London *et al.* 2007:1065). Lack of such information may result in poor uptake of PNC services. Of the 372 respondents, 13.4% (n=50) stated that a lack of knowledge may result in the low uptake of PNC services.

#### **4.23.4 Long waiting time**

The duration of time spent before the provision of PNC services, has an influence on the attendance of PNC services by mothers (Conner-Spady *et al.* 2004:1306). Of all the respondents (N=372) involved in this study, 16.7% (n=62) reported that the long wait (more than an hour) before receiving PNC services is a deterrent to attending PNC clinics.

#### **4.23.5 Stigma**

A high level of stigma is associated with poor use of sexual reproductive health services, including HIV/AIDS services (KoS, MoH 2010a:20). Of the 372 respondents, 3.8% (n=14) reported that the stigma associated with being HIV-positive is a barrier towards attendance of PNC services, especially when different programmes are offered in healthcare facilities.

#### **4.23.6 Transport fees**

One hindering factor towards accessing healthcare services for people living with HIV and AIDS is transport costs (Borgh, Ensor, Neupane & Tiwani 2006:232). About 10.5% (n=39) of the 372 respondents cited transport costs as a barrier towards accessing PNC.

#### 4.23.7 Work environment

Some employers do not give maternity leave, especially for non-professional employees. Moreover, even those who are eligible for maternity leave may experience challenges in attending PNC services because mothers might be apparently well (Dhaher *et al.* 2008:5). Of the 372 respondents, 2.7% (n=10) reported that work environments may hinder access to PNC services.

#### 4.23.8 Other challenges cited by respondents

Other barriers towards quality PNC services cited by respondents were identified by 3.5% (n=13) of the 372 respondents. These were: not feeling like attending health services, general weakness and tiredness, and many tasks at home.

#### 4.23.9 Other barriers identified

The apparent healthy feeling kept mothers from seeking essential PNC services. Of the 372 respondents, 23.45% (n=84) stated that they were well and did not see the need to attend PNC services. Figure 4.23 displays the reported possible barriers towards PNC services attendance and access.

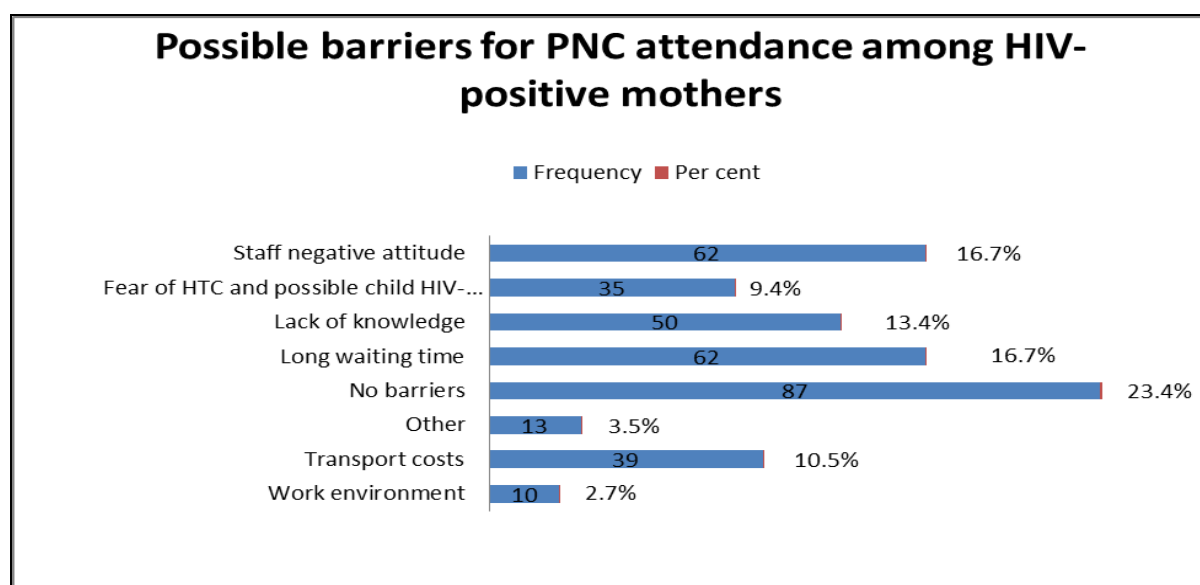


Figure 4.22 Possible barriers for PNC attendance among HIV-positive mothers

#### 4.24 POST-NATAL CARE SERVICES INTEGRATION

The Ministry of Health (KoS, MoH 2012:13) is of the view that health services should be integrated in order to reduce the waiting time for clients at healthcare facilities. The offering of PNC services was investigated in this study. The majority of the 372 respondents (85.2%, n=317) reported that PNC services were integrated in the normal healthcare services, while only 14.8% (n=55) reported that the PNC they attended was done on specific days.

#### 4.25 EVALUATION OF MIDWIVES' COMMUNICATION SKILLS

The way in which midwives communicate with post-natal women was investigated. Of the 372 respondents who participated in this research, 50.0% (n=186) reported that communication with midwives was excellent, 47.0% (n=175) said that it was good, and 3.0% (n=11) stated that it was bad. However, this finding may not be a true reflection, since the interview was conducted in the health facilities where these women were likely to protect themselves from being abused by midwives, if they reported negative statements about them, regardless of the fact that confidentiality was assured.

Table 4.11 Evaluation of midwives' communication skills

<b>Evaluation of midwives' communication skills</b>	<b>Frequency</b>	<b>Per cent</b>
Excellent	186	50.0%
Good	175	47.0%
Bad	11	3.0%
<b>Total</b>	<b>372</b>	<b>100%</b>

## 4.26 STRUCTURAL SITUATIONAL ANALYSIS OF PNC AT THE STUDY SITES

This section presents results regarding the theoretical framework that was discussed in 1.7, in the following sub-topics: **structure** (which includes human resources, material resources, and organisational resources), **outcome** (which includes maternal and infant morbidity and mortality).

### 4.26.1 Structure

According to Morestin *et al.* (2009:1), structure in this regard entails human resources, material resources and organisational resources, as discussed below.

#### 4.26.1.1 Human resources

Table 4.12 displays the human resources availability at all the study sites (N=9). Morestin *et al.* (2009:3) refer to human resources as the professionals responsible for obstetric care. They further state that midwives' availability is a pre-condition in the provision of quality PNC, and should be oriented to the relevant protocols guiding practice. The environment in which the PNC services were offered was analysed. All the study sites (N=9) 100% have midwives working in the PNC units, and all the midwives were oriented to the Ministry of Health guidelines and had supervisors (who had to provide supervision and mentoring to the midwives) (Morestin *et al.* 2009:5). However, it was discouraging to note that midwives were not adhering to the Ministry of Health guidelines although they were trained and supervised on rendering quality PNC services.

Table 4.12 Human resources availability in the study sites

<b>Structural situational analysis</b>	<b>Frequency</b>	<b>Per cent</b>
Midwives' availability	9	100%
Midwives orientation to the Ministry of Health guidelines	9	100%
Supervisors' availability	9	100%

#### 4.26.1.2 Material resource analysis for post-natal care

If quality care is to be rendered, the basic material resources should be available, because any shortage is associated with fatal outcomes (Morestin *et al.* 2009:4). Generally, all the health facilities had the basic material resources to render quality PNC services, in terms of ARVs (NVP syrups, NVP clips, AZT tablets, and 3TC tablets), hospital equipment (NVP syringes, thermometers, sphygmomanometers, examination beds), HIV testing kits (HIV determine, HIV unigold, and PCR-DNA tests), co-trimoxazole prophylactic treatment (co-trimoxazole tablets and co-trimoxazole syrups), immunisation vaccines (BCG vaccine, polio drops, DPT vaccine, hepatitis B vaccine) and other necessary material (ambulance, functional telephone, steriliser, electricity and safe water), sub-standard care was rendered, indicating midwives' failure to adhere to protocols. Not all facilities provided TB prophylactic treatment (Isoniazid tablets and Isoniazid syrup). This made participants to receive compromised care.

#### 4.26.1.3 Organisational resources

Health records are important to support continuity of care provided to clients by different professionals, with information on observations made and treatments



previously provided (Morestin *et al.* 2009:6). Health record-keeping tools were investigated to ensure assess if it was possible that identified puerperal problems and medical interventions were documented and that quality care was rendered. This was done by using a checklist. The researcher checked the health facilities' storerooms for medical supplies' availability. These included maternal records (ANC cards, PNC registers), infant records (child welfare care cards, child welfare registers) and support medical material resources, national PMCTC guidelines and central medical stores ordering forms.

Table 4.13 Organisational situation analysis

<b>Organisational situational analysis</b>	<b>Frequency</b>	<b>Per cent</b>
<b>Maternal records</b>		
ANC cards	9	100%
Post-natal care registers	9	100%
<b>Infant records</b>		
Child welfare cards	9	100%
Child welfare registers	9	100%
<b>Support medical material resources</b>		
Ministry of Health national PMTCT guidelines	9	100%
Central medical stores ordering forms	9	100%

#### 4.26.1.3.1 Quality assurance mechanism

The Ministry of Health (KoS, MoH 2010a:60) states that rigorous and independent quality assurance strategies (for instance submission of a monthly summary report) should be in place. The submission of a monthly report will portray the services rendered to HIV-positive women during PNC consultations, which will help the

country to identify PNC challenges, good practices and areas of improvement. The strategies are discussed below.

#### 4.26.1.3.1 Submission of monthly summary report

This national quality assurance strategy helps to measure the national uptake of PNC and the quality of care provided to clients (KoS, MoH 2010a:60). In this study, all the health facilities that took part in this study were submitting monthly PNC reports to the national office. These included the number of post-natal clients attended to, HIV-positive women seen, HIV-infected women given co-trimoxazole prophylaxis, number of HIV-infected women tested for CD4 cell count, number of HIV-exposed infants initiated on co-trimoxazole prophylaxis, and the number of HIV-exposed infants tested with dried blood spot. The national monthly reports for November and December 2011 were checked by the researcher.

#### 4.26.1.3.2 Functional maintenance units

Any faults and defects in the basic bio-medical resources such as oxygen cylinders, examination beds and sphygmomanometers, should be seen to immediately, to ensure uninterrupted provision of quality care to clients (Morestin *et al.* 2009:6). The availability and functionality of the maintenance units including the bio-medical unit was investigated in this study. All facilities involved in the current study reported that they had functional bio-medical units.

#### 4.26.1.3.3 Health-community linkage

Health services should be linked with the communities that are being served, to ensure high uptake of health initiatives like the use of PNC services (Morestin *et al.* 2009:7). This helps in the follow-up of clients, enabling mothers to receive uninterrupted quality PNC. The means by which the health facilities were linked with their communities was studied. Of the facilities, 100% (n=9) had health facility–community linkage means. These included community expert clients (who conducted visits to identify ART defaulters to encourage them to attend appointments and to

adhere to treatment) (WHO 2008b:23) and rural health motivators (who conducted home visits, encouraging sick people to go to hospital or clinic and post-natal women to attend PNC visits and checking infants' child welfare cards to identify immunisation defaulters in order to encourage parents to take these children for immunisations) (WHO 2008b:23).

#### 4.26.1.4.5 Medical supplies ordering forms

Medical commodities in public health facilities are centralised and supplied by the central medical stores. This is done by way of designed ordering forms. Healthcare facilities should be in possession of the pharmacy ordering forms, to ensure uninterrupted medical supplies, which will ensure that clients receive high-quality care (KoS, MoH 2010b:186). In this study, all the health facilities had medical supplies ordering forms. These were physical checked by the researcher.

### 4.26.2 Outcome

#### 4.26.2.1 Measurement of clients' satisfaction

Health facilities should determine how well they can meet the expectations of their clientele in order to improve and replicate practices that their clientele like, thus ensuring that quality care is practiced and promoted (Morestin *et al.* 2009:11). Strategies used by facilities to get such information, namely the exit interview and service satisfaction survey forms were investigated. The majority of facilities (78.8%, n=7) did not have any strategies to measure their clients' satisfactions, while only 22.2% (n=2) had a strategy to measure their clients' satisfaction (Dvokolwako PHU and Siteki PHU). It is not surprising that midwives rendered sub-standard care. There was no way they could get the feedback that their clientele was not satisfied by the PNC services rendered. These strategies included exit interview and service satisfaction survey forms that were completed by clients who were willing to do so.

#### **4.26.2.2 Measure for maternal mortality and infant mortality rates**

Swaziland is striving towards the attainment of MDG 4 and 5 by 2015. Health facilities should have their own mini-monitoring and evaluation units, to measure themselves against the national goals. Moreover, because maternal mortality rate (MMR) (589 per 100 000 live births) and infant mortality rate (IMR) (85 per 1 000 live births) is very high in Swaziland (KoS, MoH 2011a:6) health facilities should closely monitor MMR and IMR, so that they could identify strategies towards lowering MMR and IMR at facility level. However, in this study, none of the health facilities taking part in the study had any measure for MMR and IMR.

#### **4.27 CONCLUSION**

The conclusion that can be drawn from this study is that midwives who were involved in this study rendered poor quality care evidences in the provision of care at all levels, namely immediate PNC, on discharge home, at the 3–14-day PNC visit and at the 6-week PNC visit.

In Chapter 5, the findings, limitations of the study, recommendations and conclusion of the study will be discussed.

## **CHAPTER 5**

### **DISCUSSION OF FINDINGS, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION**

#### **5.1 INTRODUCTION**

This chapter outlines the purpose of the study, discusses the findings and limitations of the study and makes recommendations regarding the quality of PNC rendered to HIV-positive mothers and their HIV-exposed infants, midwifery practice, midwifery curricula, health education and also further research.

#### **5.2 PURPOSE OF THE STUDY**

The purpose of this study was to evaluate care rendered to HIV-positive women and their infants during the first six weeks after birth. Moreover, it was an attempt to assist midwives to strengthen PNC services in an effort to improve health outcomes for HIV-positive mothers and their infants.

The objectives of the study were to:

- evaluate PNC services provided to HIV-positive mothers during the first 6 weeks after birth;
- assess care rendered to HIV-exposed infants; and
- identify gaps in the delivery of quality PNC.

A quantitative, descriptive, cross-sectional and analytic design was used. The target population comprised HIV-positive mothers and their infants, who were within the postpartum period (0 to 6 weeks) and who attended PNC services at the sampled clinics, as well as one senior midwife at each of the study sites. The sample consisted of 372 respondents who attended the PNC visits as well as 9 senior midwives at the study sites. Data was collected from the respondents using a structured interview schedule on a face-to-face basis. The structured interview

schedule consisted of closed and open-ended questions. Data was collected over a period of two months, from November to December 2011.

### **5.3 DISCUSSION OF FINDINGS**

The findings are presented as follows:

- the respondents' demographic data;
- maternal immediate PNC rendered;
- PNC services and health information provided at discharge;
- PNC services and health information rendered to mothers at the 3–14 day-visit and at the 6-week visit; and
- infants' immediate care services and health information provided at discharge, care services and health information rendered at the 3–14 day visit and at the 6-week visit.

Moreover, the perceptions of mothers on PNC, and the structural situation for PNC in the different health facilities will also be outlined.

#### **5.3.1 Respondents' characteristics**

##### **5.3.1.1 Respondents' ages**

The ages of respondents as indicated in Table 4.1 showed that adolescent pregnancy was rife (9.4%). Adolescents have obstetric challenges such as sexually transmitted infections, HIV infection with its consequence of MTCT of HIV (KoS, MoH 2010g: 22). Additionally, adolescents may have limited access to health care, as they may desire to conceal their pregnancies (Leifer 2008:374). Adolescent pregnancy further has poor obstetric outcomes, as indicated by the WHO (2008b:1). This may be the reason why MMR in Swaziland is as high as 589 per 100 000 live births (KoS, MoH 2011a:6).

As many as 13.4% of respondents were in the older category (35 years and older). Such women are at risk of developing pregnancy-related complications like

postpartum haemorrhage and HIV infection due to the high fertility rate with a possibility of multiple sexual partners that may result in increased chances of MTCT of HIV (Lowdermilk & Perry 2006:75–76). Moreover, the risk for women over 35 years of age to develop life-threatening complications during pregnancy, labour and delivery and postpartum are greater (WHO 2008b:3), which might also contribute to the high MMR in Swaziland. The current study revealed that 13.4% of the respondents were 35 years of age and older. The Ministry of Health (KoS, MoH 2010g: 22) states that HIV prevalence by age groups in percentages is high: 20–24 years (40.8%), 25–29 years (51.0%), 30–34 years (53.8%), 35–39 years (43.8%) and 40–45 years (44.1%). Therefore, there is a need to render quality service to prevent maternal mortality in order to enable the country to attain MDG 4 (reducing maternal mortality by 75%) by 2015 (KoS, MEPD 2010:40).

When correlating age and the use of quality PNC services, the results showed that there was no significant relationship ( $p = 0.965$ ) between age and usage of PNC services, indicating that age had no positive influence on usage of PNC services. Reproductive healthcare services should therefore offer quality reproductive services for all women as they are equally at risk of acquiring HIV infection and the likelihood of MTCT of the virus, as supported by NERCHA (KoS, NERCHA 2012:2).

#### **5.3.1.2 Marital status**

Table 4.2 displayed the marital status of HIV-positive women who participated in this study. The majority (65.8%) were not formally married, and some were cohabiting (29.8%), single (29.8%), widowed (4.0%), separated (1.9%) and divorced (0.3%). This finding indicates that these respondents were likely to have multiple sexual partners and that they were therefore at high risk of being HIV-positive as reported by Swaziland's Statistical Office (KoS, CSO 2008:222). Only 34.1% were married, however, marriage in Swaziland is not a protective mechanism to HIV as polygamy is rife and this exposes women to HIV infection (KoS, NERCHA 2009:19). Such women would require quality PNC services, particularly HIV diagnosis and management.

When correlating the marital status of the respondents and the use of PNC services, it was found that there was no significant ( $p = 0.614$ ) level of association between respondents' marital status and usage of quality PNC services, indicating that whether women were married or not, they were equally at risk of developing HIV during pregnancy. Women should therefore be offered quality ANC, intrapartum and post-natal services at all times. This finding confirms data from Parikh (2007:1201) which stated that all women, whether married or not, were equally at risk of HIV infection in Uganda.

### **5.3.1.3 Respondents' level of education**

Respondents with low levels of education were generally less likely to conform to healthcare practices than women with higher educational levels (KoS, CSO 2008:124). However, this study found that more than half (51.8%) of the women who attended PNC services had not completed high school and some (5.9%) had no formal education at all. This finding is contradictory to findings by NERCHA (KoS, NERCHA 2009:17) which reported that education is positively associated with the use of healthcare services in Swaziland. The finding requires midwives who are committed to offer quality PNC to these women irrespective of the latter's low educational levels. This finding refutes findings by the Royal College of Midwives (RCM 2011:131) and Anwar, Sami, Chowdhury, Salma, Rahman and Koblinsky (2008:254) that maternal educational level plays a major role in determining attendance of maternal and child healthcare services PNC, as mothers with high education levels were more likely to use maternal and child healthcare services than those with low or no education.

A total of 31.2% of the respondents in the current study reported high school education while only 7.0% reported tertiary education. This means that the level of understanding issues related to reproductive health and PNC services should be at a higher level than is the case in the former group. However, when correlating the level of education and PNC attendance, it was noted that there was no significant ( $p = 0.616$ ) association between the level of education and the use of quality PNC services. The level of education therefore has no obvious positive influence on PNC



attendance. This finding is contradictory to findings by Owino (2004:105) who reported that use of maternal and child health services were positively correlated to maternal education. Women with higher levels of education were more likely than those with no education or low levels of education to attend to PNC services in Kenya.

#### **5.3.1.4 Respondents' employment status**

Respondents' employment status, as indicated in Table 4.2, showed that 51.9% of the respondents who attended PNC services were not employed. This finding confirms findings by the Ministry of Health (KoS, MoH 2010d: 13) that PNC services are heavily subsidised or almost free of charge at public health facilities. However, transport costs may be a barrier to attendance of PNC services. A correlation was found in terms of respondents' employment status and the use of PNC services. It showed that there was no significant ( $p = 0.596$ ) association between respondents' employment status and their use of quality PNC services, indicating that employment had no positive influence on the use of PNC services. This finding is contrary to that by the Royal College of Midwives (RCM 2011:131) in Kenya that employed women are more likely to access post-natal services than unemployed women since the former are empowered to decide when to attend PNC services.

#### **5.3.1.5 Residential areas**

Figure 4.2 displayed the respondents' residential areas. Of the respondents, 50.8% were living in peri-urban areas, 37.4% were residing in rural areas and 11.8% were living in urban areas. This finding indicates that respondents' residential area had an influence on attendance of PNC services. Those from peri-urban and rural areas were more likely to attend post-natal services than those from urban areas. This finding confirms findings from the study by Anwar *et al.* (2008:255) in Bangladesh, which reported that uptake of post-natal care services was bigger in rural areas (30.1%) than in urban areas (23.2%). It also refutes the National Emergency Council on HIV and AIDS (NERCHA) and Health Economics and HIV/AIDS Response Division (HEARD) report (2006:7), which documented that the urban–rural difference

in usage of health services is still observed in Swaziland, as those from urban areas are more likely than those from rural areas to use healthcare services.

However, a correlation of the respondents' residential area and the use of PNC services showed that there was no significant ( $p = 0.200$ ) relationship between respondents' residential area and their use of PNC services, meaning that attendance of PNC services was not influenced by respondents' place of abode. This may be due to the fact that the Swaziland Ministry of Health has ensured that healthcare services are situated within 8 km from the population to enhance accessibility to health care (KoS, MoH 2010b:30). This finding therefore does not support the fact that women residing in urban areas are more likely than rural women to poorly attend to PNC services (42.8% versus 32.0%) as was the case in Bangladesh (Anwar *et al.* 2008:254).

#### **5.3.1.6 Place of childbirth**

The increasing number of babies delivered in health facilities is an important factor in reducing health risks, like MTCT of HIV, and provision of prophylactic treatments to both the mother and the baby. Proper medical attention and hygienic conditions during delivery can reduce the risks of complications that can result in maternal and infant morbidity and mortality. While 74% of all births in Swaziland take place at health facilities, 25% of all babies are still delivered at home (KoS, CSO 2008:120).

This study confirmed that an increasing number of babies are delivered in health facilities, as it identified that 93.8% of the HIV-infected women delivered at health facilities. However, it was beyond the scope of this study to evaluate the quality of care services rendered to these women during delivery.

A correlation between place of birth and attendance to quality PNC services showed that there was a significant level of association ( $p = 0.019$ ) between place of birth and use of quality PNC services, indicating that place of birth had a positive influence on

respondents to attend PNC services. Dhaher *et al.* (2008:5) reported that in Bangladesh, women who had hospital deliveries were more likely to seek post-natal services. Healthcare facility-based deliveries may help with early identification and management of puerperal problems before they can become life threatening (KoS, MoH 2011a:12). Therefore, hospital delivery should be promoted, especially for HIV-positive women, as they are at risk of developing maternal and infant complications (KoS, MoH 2010a:26).

#### **5.3.1.7 Childbirth attendant**

The WHO (2010b:2) recommends that highly skilled health professionals should render effective care and should attend every birth in order to prevent MTCT of HIV among HIV-infected women. Midwives form an important part of the health workforce in the provision of quality maternal and newborn child health (MNCH) services, including PNC, and to make the necessary referral should the need arise (United Nations Population Fund (UNFPA) 2009:1). The African Health Workforce Observatory (AHWO) (2009:10) states that midwives in Swaziland are the most important assets in the delivery of quality reproductive health service.

This study confirmed that midwives are an important component in Swaziland in the provision of quality maternal and child health services, as it identified that the majority (81.7%) of the HIV-positive women were assisted by midwives to deliver their babies. Only 10.5% of the births were managed by doctors and a smaller percentage (1.6%) was assisted by both doctors and midwives. On the other hand, 6.2% of the HIV-positive women were delivered by traditional birth attendants, confirming that home births, whereby women are assisted by traditional birth attendants, is a common phenomenon in Africa (Warren *et al.* 2006:79).

A correlation between the birth attendant and the quality of PNC service rendered revealed that there was a significant ( $p = 0.0159$ ) level of association between child birth attendant and the provision of quality PNC services, indicating that child birth attendants have had important roles in the provision of quality PNC services. This finding indicates that midwives could positively influence post-natal clients to attend

PNC services, and this is consistent with an observation by Warren *et al.* 2008:3). This finding confirms the finding by UNFPA (2009:1) that midwives are the backbone of reproductive healthcare needs of women, and that they provide quality maternal and newborn child health (MNCH) services.

### **5.3.2 Post-natal care rendered to HIV-positive mothers**

The post-natal period is a critical time to monitor the recuperation phase and offer essential care (WHO 2002a:296), including safe infant feeding practices, effective family planning practices, monitoring the CD4 cell count, offering ARV treatment and initiating co-trimoxazole prophylaxis for babies. It also offers the opportunity to address components of preventive essential maternal and newborn care in order to identify mothers and/or infants at risk of developing HIV and AIDS (Warren *et al.* 2008:8).

The Ministry of Health has adopted new guidelines with detailed PNC interventions as a strategy to reduce MMR and IMR. These have been categorised according to the three critical puerperal periods:

- immediately after childbirth, in order to assess and manage risks associated with childbirth to both mother and neonate;
- between 3 and 14 days after birth, in order to identify and manage early puerperal complications and the adaptation process of the neonate to the extra-uterine environment; and
- at six weeks after delivery, in order to assess and manage the recuperation stage and to advise the mother on family planning services and to assess growth and well-being in baby, including immunisation and prophylactic treatment for HIV infection (KoS, MoH 2010a:36–45).

#### **5.3.2.1 Immediate post-natal care services rendered**

The immediate post-natal period is a critical period for the foundation of recuperation, adaptation to the environment and for psychological attachment

between mother and baby. It is therefore important for the midwife to monitor this period and to render quality care to both mother and baby (Lowdermilk & Perry 2006:604). Vital signs are important indicators that help in the early identification of puerperal problems before they can become life threatening (Leifer 2008:231). Vital signs should be measured during the recuperation stage in order to identify any deviations from the normal, which would indicate puerperal complications (Fraser & Cooper 2003:633). Therefore, midwives should measure vital signs during the critical period (1<sup>st</sup> hour). Failure to render these services would mean that women receive poor immediate PNC.

#### 5.3.2.1.1 Maternal temperature

Section 4.5.1.1.1 discussed maternal temperature, which identified that only 44.9% of the HIV-infected women had their temperature measured. This finding indicated a gap in rendering quality PNC. As many as 63.1% of women did not have their temperature measured and they were likely to develop puerperal infection, which could lower their immunity state, leaving them vulnerable to AIDS (Fraser & Cooper 2003:633). These respondents who did not have their temperatures measured may also have had undiagnosed puerperal infections, leading to low CD4 cell counts, thus increasing the chances of MTCT of HIV (KoS, MoH 2010a:11).

#### 5.3.2.1.2 Maternal pulse rate

Measuring the pulse rate immediately after delivery would alert the midwife to puerperal complications which could have an effect on the heart, which may become life threatening within a short space of time. These may include signs of hypovolemic shock, which could require immediate blood transfusion and other fluids (Leifer 2008:231). Ziyane and Thwala (2010:16) and the Swaziland Central Statistical Office (KoS, CSO 2008:123) state that 60% of maternal deaths occur during the first 48 hours of puerperium. Therefore, measurement of maternal pulse rate is essential as failure may result in unnecessary maternal deaths within a short time.

This study revealed that only 26.6% of the HIV-positive mothers taking part in the research had their pulse rate counted. The majority (74.4%) were therefore put at risk of puerperal conditions which could have had an effect on their hearts. This indicated that women received sub-standard care during the critical immediate postpartum period. Urgent and drastic efforts to improve the quality of PNC are necessary if the country is to reduce MMR by 75% by the year 2015.

#### 5.3.2.1.3 Maternal blood pressure

Pre-eclampsia or eclampsia is the second leading cause of maternal deaths among HIV-positive women in Swaziland (KoS, MoH 2011d: 7). Midwives should be vigilant and aggressive in early identification and management of this. If need be, early referral should be made to prevent maternal deaths (UNFPA 2009:1). All maternal life-saving interventions against pre-eclampsia or eclampsia start with blood pressure measurement, as this will inform the midwife of the interventions to render. Failure to measure mothers' blood pressure may result in unnecessary maternal deaths. This study reported that 20.2% HIV-positive mothers were put in danger of developing or even dying from blood pressure-related conditions, indicating a gap in the provision of quality PNC. This finding indicates midwives' failure to follow national guidelines.

#### 5.3.2.2 HIV antiretroviral medication

HIV-positive mothers should be initiated on ARV prophylaxis, which includes zidovudine and lamivudine, immediately after delivery, and those already on ART should continue with treatment without interruption (KoS, MoH 2010a:32). It is the responsibility of the midwives to enquire from the mothers about the ARV medication they are using so as to provide if they do not take these already, ensuring adherence to treatment. Failure may result in drug resistance and increased viral load thus reducing CD4, promoting MTCT of HIV (KoS, MoH 2010f:45).

Therefore, it is mandatory for midwives to inquire about ARV administration. This may help mothers to note the importance of adhering to ARV treatment and minimise the chances of MTCT of HIV. However, only 31.2% of the respondents were asked

about ARV medication, which indicates a gap in 69.8%, giving rise to respondents who were likely to acquire ARV drug resistance and which could hinder the prevention of MTCT of HIV (KoS, MoH 2010f:45). Midwives failed to render comprehensive care to a majority of eligible women, exposing them and their infants to risks.

### **5.3.2.3 Vitamin A administration**

Vitamin A has been identified as an effective component for health and survival of both mothers and children, as it can reduce mortality from all causes by approximately 23%, because it enhances resistance to disease. Hence, it is mandatory for HIV-positive post-natal clients to receive the treatment (UNICEF 2007:3). The Ministry of Health (KoS, MoH 2010a:38) states that vitamin A (200 000 IU) should be given to mothers after delivery. Midwives should adhere to the Ministry of Health guidelines regarding vitamin A administration because of the above-mentioned benefits, which may promote health and well-being of HIV-positive mothers, more especially because these mothers are at risk of developing opportunistic infections. Vitamin A may boost their resistance against these infections.

Despite the above-documented benefits of vitamin A administration, this study reported that only 34.1% of the HIV-positive mothers were offered vitamin A as recommended by the Ministry of Health (KoS, MoH 2010a:38). This finding indicates that 65% did not receive this immune booster, rendering them vulnerable to diseases, especially opportunistic infections.

This indicates a gap in the quality of PNC provided by midwives, which may render these women vulnerable to opportunistic infections that may lead to progression to AIDS, thus increasing chances of MTCT. When correlating childbirth attendants and vitamin A administration, a significant ( $p = 0.0042$ ) level of association between childbirth attendant and vitamin A administration was observed, indicating that administration of the vitamin was influenced by the child birth attendant. However, midwives failed to offer it to the respondents.

#### **5.3.2.4 Physical examination**

Physical examination immediately following childbirth would identify whether the mother was pale and cyanosed, whether the uterus was well contracted to prevent postpartum haemorrhage, to evaluate the psychological state of the woman and to measure the adaptation process following childbirth (Fraser & Cooper 2003:628). This intervention would help identify any puerperal problems in post-natal women immediately, such as vaginal bleeding, 3<sup>rd</sup>-degree perineal tears and many more, which may lead to serious puerperal complications if not identified and managed early (London *et al.* 2007:472).

This study revealed that only 53.2% were examined following childbirth, by either a doctor or a midwife. In other words, 46.8% of the respondents were not offered this critical clinical assessment intervention, indicating poor quality of service rendered to these high-risk post-natal clients, which may have a negative outcome on maternal health, like undiagnosed postpartum haemorrhage. The ICM (2011:1) states that midwives as healthcare professionals are required by law to render quality services. This finding refutes a study by Warren *et al.* (2008:28) in Swaziland that 93% of post-natal women were given a general examination immediately after delivery.

#### **5.3.3 Immediate post-natal care information given to HIV-positive mothers**

According to Lowdermilk and Perry (2006:604), provision of postpartum care is important, as well as the important health information to be given to the mother to enhance self-care and newborn care. The information given to mothers was categorised and will be discussed under the following headings: exclusive breastfeeding, ARV drug adherence, exclusive replacement feeds, and prophylactic measures to counteract MTCT of HIV, and perineum care.

##### **5.3.3.1 Exclusive breastfeeding**

WHO (2002b:3) recommends exclusive breastfeeding to infants of HIV-positive mothers as the ideal feed. The Ministry of Health (KoS, MoH 2010a:46) adopted this



recommendation in its Ministry of Health policy (KoS, MoH 2010a:46), that exclusive breastfeeding is recommended for all infants for the first six months of life, irrespective of maternal HIV status. Breast milk is healthy, acceptable, and free and helps prevent diarrhoea and respiratory infections in the baby.

This study identified that 58.1% of the HIV-positive women were advised by midwives to exclusively breastfeed their infants during the first six months of life. This finding indicates that not all midwives are rendering quality infant feeding education to HIV mothers; who may give early supplementation or offer both breast and replacement feeds with its consequences of MTCT of HIV (KoS, MoH 2010a:46).

### **5.3.3.2 Exclusive replacement of feeds**

The WHO (2001:8) recommends exclusive replacement of infant feeding to HIV-positive mothers who are unwilling to breastfeed exclusively. Mothers who practice exclusive replacement infant feeding should meet the acceptable, feasible, affordable, sustainable, safe (AFASS) criterion, which is an assessment tool for appropriateness of replacement infant feeding. Failure to meet the AFAAS criteria may increase diarrhoea, malnutrition and failure to thrive, which may lead to morbidity and mortality among young infants.

However, this study reported that 56.2% of the respondents were informed about exclusive replacement feeding as a prophylaxis measure to MTCT of HIV during the puerperium. It was probably due to the fact that the Ministry of Health (KoS, MoH 2010a:47) recommends that one-on-one interviews with each HIV-infected mother should be conducted. Even then, as many as 43.8% were not given this important information, implying that mothers may make an abrupt infant feeding decision without guidance, and so increase the chances of MTCT of HIV to their infants with morbidity and mortality as its consequences.

### **5.3.3.3 Antiretroviral drug adherence**

Adherence to ARV medicines cannot be over emphasised. Every mother using these medicines should therefore undergo an adherence counselling session every time she comes into contact with caring midwives (KoS, MoH 2010a:41). Adherence to ARV medication is important to keep the viral load down, prevent opportunistic infections and to prevent MTCT of the virus (KoS, MoH 2010a:50). It is therefore important for mothers to understand the need to adhere to ARV medication in order to prolong their lives, prevent mortality and to protect their infants from acquiring HIV infection.

Midwives should impart the necessary knowledge on the importance of adherence to ARV medication, as adherence decreases maternal morbidity and mortality, improving quality of life and reducing MTCT of HIV (KoS, MoH 2101f:18). The majority of HIV-infected women who were part of this study (61.3%) were not educated on the benefits of adherence; only 38.7% of the respondents were informed about adherence to ARV medication. This indicates a gap in the quality of care rendered implying that midwives failed to follow national protocols, thus resulting in provision of poor PNC services, which may lead to unnecessary maternal morbidity and mortality and/or an increased risk of infants acquiring HIV.

### **5.3.3.4 Perineal hygiene**

Section 4.5.2.4 presented the result of respondents informed about perineal hygiene. This study identified that 56.2% of the respondents were taught by midwives about perineal hygiene by using saline sitz baths. This indicated a gap of about 43.8% of HIV-infected mothers who were put at risk of developing perineal infection, which can be prevented easily. This finding revealed that midwives who were involved in this study failed to practice the essential role of the midwife: being an educator for PNC clients as stated by the ICM (2011:4). Their failure resulted in HIV-positive women receiving sub-standard PNC, which may lead to these women suffering from ascending infection to the uterus which may result in serious uterine infection (Fraser & Cooper 2003:632)

### **5.3.4 Post-natal care services rendered to HIV-positive mothers including the discharge plan**

Generally, post-natal clients are discharged home within twenty-four hours to seven days, depending on the mode of delivery; hence, the title of this subsection is presented as the “discharge plan”. Before discharge, mothers should be advised and encouraged to attend PNC visits at healthcare facilities on scheduled visits or whenever they notice any danger signs; because of the high risk of death of either the mother or the infant (Warren *et al.* 2006:85).

#### **5.3.4.1 Maternal vital signs**

The Ministry of Health (KoS, MoH 2010a:38) recommended that vital signs, especially temperature and pulse blood pressure be measured and physical examination be performed before discharging post-natal women. These would provide valuable clinical information on how the mothers are recuperating from childbirth; ensure identification and management of puerperal problems. Moreover, this will determine the frequency and time mothers should visit PNC clinics (WHO 2002a:296).

##### **5.3.4.1.1 Maternal blood pressure**

Measuring maternal blood pressure before discharge may help with early identification of signs and symptoms of the second killer cause (pre-eclampsia or eclampsia) among HIV mothers in Swaziland (KoS, MoH 2011d:7). However, this study identified that only 64.5% of the respondents had their blood pressure measured, indicating that 34.5% of HIV-positive mothers did not have their blood pressure measured.

This finding thus revealed this detrimental gap and the provision of compromised PNC by midwives. Failure to measure maternal blood pressure may result in failure to render relevant PNC interventions, for example mothers who had a slight increase

in their blood pressure, requiring no treatment but only nutritional counselling on avoidance of foods with high sodium content and the importance of frequent visits to the nearest facilities for close monitoring. Such information may not be provided if the blood pressure is not been measured.

#### 5.3.4.1.2 Maternal pulse

Counting the pulse rate would immediately alert the midwife on puerperal complications which could have an effect on the heart, which might become life threatening within a short space of time. This may also indicate that puerperal infections that may require prophylactic antibiotic treatment were diagnosed (Leifer 2008:231). It is expected of midwives to count the pulse rate for mothers before discharging them from their care (KoS, MoH 2010a:38). However, only 25.0% of the respondents had their heart rate monitored, meaning that the majority (75.0%) were put risk of developing life-threatening puerperal complications, which might result in preventable maternal deaths. This indicates that the quality of obstetric care provided was of poor quality, indicating a life-risk gap in the provision of PNC by midwives.

#### 5.3.4.1.3 Maternal temperature

Measuring HIV-positive mothers' temperature before discharge is critically important in the early identification of puerperal infections, as these women are at risk or they are prone to the development of puerperal and opportunistic infections, because of their low immunity (KoS, MoH 2010f:57). The temperature result may alert midwives to offer prophylactic antibiotics to mothers with elevated body temperatures, which might indicate puerperal infection. This may also influence the frequency with which such mothers may be expected to visit healthcare facilities, as they require close obstetric monitoring (Fraser & Cooper 2009:659).

This study reported that 46.5% of the HIV-infected mothers who were at higher risk of developing puerperal infections and opportunistic infections were not screened for such possible life-threatening puerperal complications. This indicates another life-

threatening gap in the manner midwives provided PNC. This gap may lead to unnecessary HIV infection by infants and/or even maternal deaths. This finding is contradictory to findings by Warren *et al.* (2008:8) who reported that 89% of the respondents had their temperature measured on discharge home.

#### **5.3.4.2 Physical examination**

Physical examination results may help identify mothers who have 3<sup>rd</sup>-degree perineal tears or a not contracted uterus that may result in maternal death due to postpartum haemorrhage (London *et al.* 2007:472). HIV-infected women are at risk of having puerperal infection, and might require frequent obstetric care monitoring and provision of prophylactic antibiotics (KoS, MoH 2010f:57). Therefore, it is of paramount importance that midwives conduct physical examinations, to help avert unnecessary maternal deaths due to preventable causes like postpartum haemorrhage.

Surprisingly, only 40.6% of the HIV-positive mothers taking part in the research were physical examined. The majority (59.4%) were allowed to go home without being offered a crucial PNC intervention. This indicates gross negligence on the part of the midwives at the research sites (ICM 2011:14), resulting in poor quality of obstetric care received by mothers. The sexual reproductive health unit (SRHU) should take urgent steps towards addressing this gap in the provision of PNC, especially for HIV-positive mothers because they are prone to puerperal complications as well as opportunistic infections.

#### **5.3.4.3 Counselling on family planning**

Midwives have extensive knowledge on family planning methods. These include barrier, steroidal, mechanical, chemical and surgical methods of contraception and indications for use (ICM 2002:5). Moreover, because the Ministry of Health (KoS, MoH 2010a:12) strives to prevent unintended pregnancies among HIV-positive women, midwives should impart their knowledge on family planning options available

in the country and they should state that it is available free of charge at public health facilities.

This study found that 85.5% post-natal women were counselled on family planning options. This finding indicates a 14.5% gap, which results in provision of poor-quality of PNC services rendered to HIV-positive mothers. This is not acceptable because the country is aiming at prevention of unintended pregnancies among HIV-positive women (KoS, MoH 2010a:12). This finding indicates that these women may have unplanned pregnancies, because of midwives' failure to provide family planning counselling.

### **5.3.5 Post-natal care information given on discharge**

Before discharge, mothers should be advised and encouraged to attend scheduled PNC visits at healthcare facilities or whenever they notice any danger signs, because of the high risk of death of either the mother or the infant (Warren *et al.* 2006:85).

#### **5.3.5.1 Maternal danger signs**

Women should be equipped with knowledge on specific maternal danger signs, so that they may seek medical care as early as possible. This will ensure that complications are identified early before they become life threatening. It is the task of midwives to provide health education and counselling on maternal danger signs (which include vaginal bleeding, fever, headache and foul-smelling vaginal discharge (ICM 2002:5).

This study identified that 28% of the respondents were not educated on these life-threatening puerperal conditions, which are claiming lives of Swazi women, especially among HIV-positive women (KoS, MoH 2011f:7). This shows the poor quality of PNC services rendered and reflects a gap in quality care that may be contributing to the high MMR in Swaziland, which could be due to the way midwives rendered obstetric care.

### **5.3.5.2 Immunisations**

Universal immunisation of children against vaccine-preventable diseases is crucial to reducing infant and child mortality (KoS, CSO 2008:127). According to the WHO (2012), immunisation coverage of BCG and polio (the initial polio vaccine) in Swaziland was 99.5%. This was deemed a positive step for the country (Swaziland) towards achieving MDG 4 by 2015. The Ministry of Health guidelines (KoS, MoH 2010a:38) recommend that infants should be immunised according to the national expanded programme on immunisation, regardless of their HIV-exposure status, namely BCG and polio immediately after birth, DPT and polio at six weeks and DPT at 10 and 14 weeks. Mothers should be informed about the immunisation schedule on discharge from health facilities. This might enhance attendance of PNC services. Other obstetric care services may be also offered. This study reported an 8.1% gap of mothers who were not informed about the immunisation schedule, meaning that midwives failed to adhere to national protocols. This implies that these mothers would therefore also not attend PNC services.

### **5.3.5.3 Co-trimoxazole prophylaxis**

Co-trimoxazole reduces morbidity and mortality among infants exposed to HIV, by preventing opportunistic infection. It should be given to all exposed infants from six weeks onwards (KoS, MoH 2010a:50). In addition, the Ministry of Health (KoS, MoH 2010a:50) recommends that all HIV-exposed infants be initiated on co-trimoxazole at the age of 6 to 8 weeks, to help reduce and prevent the development of opportunistic infections, which may result in infant deaths if not attended to in time as the infant's body is still immature and resistance to infection is low.

Mothers should be educated on the signs and symptoms of such infections, which include recurrent or chronic upper respiratory tract infections (otitis media, sinusitis), unexplained moderate malnutrition, and failure to thrive (KoS, MoH 2010a:74). Midwives should educate these mothers on this life-saving prophylaxis. The current study reported that 88.7% of the respondents were educated on the importance of co-trimoxazole prophylaxis, indicating an 11.3% gap of mothers who were not educated on this important prophylactic treatment.

This shows another discrepancy in the manner PNC services were rendered to these women by midwives, which requires the country, specifically the SRHU to address these gaps and improve PNC services offered to women, especially post-natal women living with HIV.

#### **5.3.5.4 Nevirapine prophylaxis**

The WHO (2010a:28) recommends that all HIV-exposed infants be offered NVP prophylaxis. In the case of mothers on ART, their infants should receive NVP until six weeks, and mothers who receive ARV prophylaxis or nothing while breastfeeding should take NVP until one week after breastfeeding has stopped. The very same recommendation has been adopted by the Ministry of Health (KoS, MoH 2010a:49), as this prophylaxis helps reduce the risk of MTCT of HIV; thus promoting HIV-free infants.

Kwashie (2012:11) reveals that, since the adoption of the new guideline (the use of extended NVP prophylaxis) among HIV-exposed infants, the national MTCT rate of HIV is at 2% in children aged 6–8 weeks. This indicates an achievement of prevention of paediatric HIV, which results in a reduction of infant mortality, and a better possibility of MDG 4 attainment. However, this study reported that 5.9% of the respondents were not taught on NVP prophylaxis, indicating a lifetime risk of HIV infection by the infants as a result of the provision of sub-standard care by midwives.

#### **5.3.5.5 Post-natal care at 3–14 days puerperium**

Provision of quality immediate PNC is critically important to save maternal lives, but if there is no follow-up on obstetric cases, all those interventions may be of no use (KoS, MoH 2010a:39). It is necessary for mothers, especially for HIV-positive mothers, to visit health facilities within 3–14 days after delivery, for continuous obstetric monitoring, for early identification of puerperal problems and for provision of critical PNC services. These include refilling NVP prophylaxis for the baby, replenishing co-trimoxazole tablets for the mother and screening for TB and opportunistic infections (KoS, MoH 2010a:37).



Therefore, midwives should educate mothers about the importance of attending PNC services within 3–14 days after childbirth as recommended by the Ministry of Health (KoS, MoH 2010a:41). This helps with the monitoring of maternal health, which can help to promote maternal health and reduce chances of MTCT of HIV. However, this study identified that 6.2% of the respondents were not advised on the importance of the 3–14 days PNC visit. This may result in non-attendance of the 3–14 day PNC visit, thus depriving the mothers and their infants of the opportunities of health assessment, treatment, care and support. These interventions could promote healthy maternal and infant survival, thus reducing the risk of MTCT of HIV.

#### **5.3.5.6 Post-natal care at 6 weeks puerperium**

As the mother is still recuperating from delivery, it is important that she be monitored accordingly (WHO 2002a:296). The Ministry of Health (KoS, MoH 2010a:44) recommends that post-natal mothers should attend the 6-week PNC visit. This will not only help in monitoring the mother's recovery from delivery; it will also provide an opportunity for receiving other key interventions (like CD4 cell count testing, haemoglobin testing, co-trimoxazole prophylaxis, counselling and support). This in turn may enable midwives to identify signs and symptoms of life-threatening conditions, e.g. persistent vaginal bleeding, urinary retention and postpartum pre-eclampsia (ICM 2002:10). Therefore, it is of great importance that midwives counsel and educate mothers on the importance of attending the 6-week PNC visit.

This study identified that 5.6% of the respondents were not advised on the importance of the 6-week PNC visit, indicating a gap in the manner midwives provided PNC. This might lead to the deprivation of such mothers and infants of important PNC interventions, including initiation of co-trimoxazole prophylaxis by the infant, early infant diagnosis of HIV, which all can prevent MTCT of HIV, thus ensuring healthy infant survival (KoS, MoH 2010a:54).

#### **5.3.5.7 Safe feeding practices**

The WHO (2009d:16) recommends exclusive breastfeeding as the key option for infant feeding, but also provides guidance on exclusive replacement feeding and

seriously discourages mixed feeding, especially among HIV-infected mothers, as this may enhance MTCT of HIV, leading to HIV infection, which may result to increased infant morbidity and mortality. The Ministry of Health guidelines (KoS, MoH 2010a:46) adopted the WHO recommendations (2009d: 16) on safe infant feeding options (exclusive breastfeeding, exclusive replacement feeding) and discourage mixed feeding.

Maternal HIV-exposure status is not a hindrance to exclusive breastfeeding. All infants should be breastfed exclusively for the first six months of life. Midwives should recommend, educate and promote exclusive breastfeeding (KoS, MoH 2010a:46). On the other hand, the Ministry of Health (KoS, MoH 2010a:47) recommends that in the case of HIV-positive mothers considering not to breastfeed, midwives should conduct one-on-one discussions to consider issues on acceptability, feasibility, accessibility, affordability and safety of replacement feeding.

This study identified a 6.5% gap in the way midwives provided PNC, especially with regard to safe infant feeding information, as these women were not given the appropriate information on their chosen infant feeding option. This may result in mixed feeding that may enhance MTCT of HIV, if the mother is HIV infected. The SRHU should conduct supervision and mentoring for midwives, if the virtual elimination of paediatric HIV by 2015 is to be attained.

#### **5.3.5.8 Maternal nutrition**

Nutrition is an important aspect of the care for a person with HIV at all stages of the disease (WHO stage 1, 2, 3 and 4) (KoS, MoH 2010f:22). The importance of the mother adhering to a balanced diet is therefore crucial in maintaining good maternal nutrition and health, since poor nutrition increases the risk or chances of MTCT of HIV (KoS, MoH 2010a:11). Therefore, midwives should counsel mothers on the importance of a proper diet based on local available foods. However, this study identified a 16.9% gap in the manner midwives offered PNC, resulting in women receiving compromised obstetric care, which may lead to HIV acquisition by the infants.

### 5.3.6 Medical supplies given on discharge

The Ministry of Health (KoS, MoH 2010a:37) recommends that all HIV-positive post-natal clients be given infant NVP prophylaxis, an NVP clip (a medical instrument used to measure the correct infant dose) and a 5-ml syringe to take home for administration of the correct NVP dose to the infant.

#### 5.3.6.1 Nevirapine prophylaxis

This study identified that 6.5% of infants were placed at risk of acquiring HIV through MTCT, whereas the Ministry of Health has put in place means of reducing such unfortunate cases, but midwives failed to provide NVP prophylaxis, indicating another detrimental gap in the provision of PNC to HIV-infected mothers. This requires urgent intervention by the SRHU. The use of ARV medication has proved to be effective in reducing the risk of MTCT of HIV (Kwashie 2012:11). Noel *et al.* (2008:3723) state that the use of ARV medication in HIV-positive women showed a decrease in MTCT of HIV from 27% to 10% in pre-treatment, and to 1.9% with ART treatment (Noel *et al.* 2008:3723).

When correlating the childbirth attendant and the supply of NVP prophylaxis, a significant ( $p = 0.004$ ) association was observed, indicating that childbirth attendants had a positive influence on the supply of NVP prophylaxis. Likewise, a significant ( $p = 0.002$ ) association was observed between the place of childbirth and the supply of NVP prophylaxis. This finding indicates that midwives were in a good position to offer this lifesaving prophylaxis to the respondents.

#### 5.3.6.2 Nevirapine clips

About 33.6% of the respondents were not given the NVP clips, putting their babies in danger of either receiving over-doses or under-doses of the medication and consequent acquisition of HIV through MTCT, which may lead to increased infant morbidity and mortality, just because midwives failed to adhere to guidelines. This indicates a life-threatening gap and poor quality of PNC services rendered. These are detrimental to the health and survival of the babies.

### **5.3.6.3 Nevirapine 5-ml syringe**

Providing NVP prophylaxis without the necessary supplies to help mothers in measuring the right dosage is equivalent to not giving it. The possibility of administering an over-dosage or under-dosage is high. The Ministry of Health (KoS, MoH 201a:37) recommends that midwives provide mothers with an NVP 5-ml syringe to help them measure the correct dosages. This study identified that 6.5% of the HIV-positive mothers were not given the 5-ml syringe to aid with measuring the correct dose. Midwives failed to follow guidelines in this regard, indicating another dangerous gap in the information supplied by midwives during the provision of PNC services, which may result in infants receiving over-doses or under-doses, putting these infants at risk of acquiring HIV, as a result of sub-standard care rendered to their mothers.

### **5.3.7 Medical supplies usage demonstration by midwives**

The Ministry of Health (KoS, MoH 2010a:37) recommends that instruction and demonstration on the use of the medical supplies, which are distributed to respondents, are mandatory to ensure proper and efficient use of supplies and to enhance adherence to the prophylactic treatment. This will not only help with the administration of the drug, but also with the administration of the right dosage. Therefore, midwives should ensure that mothers can use the supplies (syringe and clip) correctly and comfortably, before they can be given it, as the mothers would be alone in their different homes using the supplies.

In this study, 86.3% of the respondents indicated that they received information and demonstration on the use of the supplies/instruments to administer ARVs to their infants; while as many as 13.7% did not receive relevant instructions from the midwives on the use of medical supplies or about how they were to administer the NVP prophylaxis. This finding indicates that these women had no knowledge on the use of medical supplies or how to administer medication to the infant, which may result in poor administration of and poor adherence to ARV prophylaxis, thus leading

to higher chances of MTCT of HIV. This shows that midwives rendered PNC services of poor quality, which may lead to HIV acquisition by the infants.

### **5.3.8 Respondents' return demonstration on the use of medical supplies**

This study identified that 27.2% indicated that they were not given a chance to practice the usage of the medical supplies before discharge home. This shows that midwives disregarded the Ministry of Health guidelines (KoS, MoH 2010a:37) that mothers should practice and be efficient in using the medical supplies before they are discharged home in order to enhance adherence to ARV prophylaxis. This finding indicates that mothers were likely to administer either under-dosages or over-dosages to their infants, enhancing the risk of MTCT of HIV. This is a reflection of the poor quality of care rendered by midwives to clients, which may result in poor outcomes for HIV-exposed infants, failure to follow national guidelines and a detrimental gap in the manner midwives render PNC services.

### **5.3.9 Respondents' assurance of support from mentor mothers or expert client by midwives**

This study found that about 28.5% of the respondents disagreed to have received any psychological support during their PNC attendance from mentor mothers or expert clients after being referred to by midwives, to ensure continuous psycho-social support. The Ministry of Health recruited a special cadre called mentor mothers and expert clients (KoS, MoH 2010a:41) in an effort to provide psycho-social support to HIV-positive mothers. This finding indicates that PNC of compromised quality was rendered and that there was a serious gap in the way midwives offered PNC. That may result in mothers not adhering to prophylaxis and not attending PNC appointments or even that mothers practice mixed feeding, which enhances MTCT of HIV. This can increase both maternal and infant morbidity and mortality. Moreover, this finding indicates that midwives disregarded the psycho-social aspect of these women while providing PNC to them (Leifer 2007:199).

### **5.3.10 Post-natal care services provided to HIV-positive mothers within 3–14 days**

The Ministry of Health (KoS, MoH 2010a:39) recommends that post-natal women be advised and encouraged to attend postpartum visits within 3 to 14 days following the delivery for clinical monitoring. The quality of PNC provided to the 372 respondents during the 3 to 14 days was evaluated. The correlation between childbirth attendant and PNC attendance within 3 to 14 days, it revealed a significant ( $p = 0.0041$ ) level of association between childbirth attendants and PNC attendance within 3 to 14 days. This finding indicates that childbirth attendants had a positive influence on HIV-positive mothers in this study towards the usage of PNC services.

#### **5.3.10.1 Collecting history and conducting physical assessment**

The provision of quality PNC services involves taking pregnancy, labour and birth history, performing a physical examination of the mother, promoting and supporting uninterrupted exclusive breastfeeding and identifying puerperal problems (ICM 2002:10).

##### **5.3.10.1.1 Pregnancy history**

This study reported that only 48.4% of the respondents had their pregnancy history taken by midwives. The majority (51.6%) were not asked about their pregnancies, indicating that if they had potential puerperal complications as a result of risks and health problems due to pregnancy, like anaemia, low CD4 count, and recurrent opportunistic infections, these were not identified for further PNC assessments, like haemoglobin level and CD4 cell count testing (London *et al.* 2007:361). This finding indicates that women with puerperal complications could come to health facilities and go back home without proper obstetric care. This might be a contributing factor to the high MMR in Swaziland. It further indicates compromising of the quality of PNC services rendered and failure of midwives to perform their responsibility. The ICM (2002:10) state that taking a comprehensive post-natal history is the responsibility of midwives to help them gain baseline information about the clients' pregnancy

progress, risks and problems that they have and which might re-surface during the postpartum period.

Potential life-threatening puerperal complications may re-surface from the effect of pregnancy. This can be averted, but due to midwives' failure to enquire about these women's pregnancy histories may result in unnecessary progression to AIDS, HIV infection in infants, maternal and morbidity and mortality (KoS, MoH 2010a:11).

#### 5.3.10.1.2 Medication ingested during pregnancy

The Ministry of Health (KoS, MoH 2010a:41) indicates that, during the 3–14 day PNC visit, midwives should ascertain the ARV regimen the mother received during pregnancy, so that the relevant prophylaxis may be given to the mother. This will include co-trimoxazole prophylaxis and zidovudine and lamivudine prophylaxis post-delivery. However, this study identified that only 55.4% were asked about ARV medication they had taken during their pregnancies, whereas this is a crucial part in the provision of quality PNC to HIV-positive mothers and the prevention of MTCT of HIV.

This indicates that as many as 44.6% of the respondents were not asked on the medication they used during their pregnancies, which might have deprived midwives of valuable information and consequently the mother of accurate and appropriate PNC interventions. This finding indicates that these women did not receive proper interventions, like ARV prophylaxis and co-trimoxazole, which may result in increased chances of MTCT of HIV and unnecessary maternal and infant morbidity and mortality (KoS, MoH 2010a:41).

#### 5.3.10.1.3 Intrapartum history

This study revealed that only 26.6% of the respondents were asked about their intrapartum history, and the majority (73.4%) were not assessed for their intrapartum history. The Ministry of Health (KoS, MoH2010a:33) however states that most

maternal deaths are attributed to complications related to the intrapartum period. In addition, the majority of MTCT of HIV cases occur during this time.

This finding means that HIV-positive mothers with possible puerperal problems resulting from problems during the intrapartum period were not identified and managed. Problems could include low haemoglobin level, low CD4 cell count, and opportunistic infections that could require close monitoring and obstetric interventions to prevent progression to AIDS and/or HIV acquisition by infants. This indicates that midwives failed to render quality PNC to these women. That ICM (2002:8), however, states that it is of pivotal importance that midwives take specific intrapartum history to provide relevant and appropriate obstetric care.

#### 5.3.10.1.4 Place of birth

This study identified that 37.9% of the HIV-positive mothers were not asked about their place of delivery. Knowing about the place of childbirth would provide insight about the gaps that particular post-natal clients missed, for example home deliveries might have missed immunisations and ARVs and might have also have unattended issues, like examination of the perineum to identify puerperal problems like tears. If not attended, these problems might result in life-threatening puerperal complications (puerperal sepsis, postpartum haemorrhage and HIV acquisition by infants) or even death if not promptly identified and managed (KoS, MoH 2010a:39).

This finding indicates that these women were offered compromised PNC and/or even irrelevant care, as specific post-natal interventions for the individual woman related to birth place were not reported. The Swaziland Central Statistical Office (KoS, CSO 2008:120) documents that the place of birth has an influence on the quality of medical attention and hygienic conditions during delivery, which may reduce or increase the risks of complications and infections that can cause morbidity and mortality to either the mother or the baby during the post-natal period. Moreover, the Ministry of Health (KoS, MoH 2010a:39) states that midwives should ask about the place of child birth, to identify possible post-natal problems like puerperal infection.



Midwives failed to render quality PNC to these women and their failure may result in the development of puerperal complications.

#### 5.3.10.1.4 Mode of delivery

The ICM (2002:10) states that midwives must take a comprehensive history, including the mode of delivery. This will help the midwife to identify any possible complications related to the mode of delivery, so that early medical care can be rendered before the identified problem becomes life threatening. However, 37.9% of the respondents were put at risk of going back home with unidentified puerperal problems. HIV-positive women, who delivered through Caesarean section and with a low CD4 count, might have problems with healing of the operated site. Asking about the mode of delivery could help midwives identify these women, so that they may be provided with prophylactic antibiotics and frequent monitoring, to ensure healthy recuperation.

This finding indicates that sub-standard PNC was offered to these women, which might result in undiagnosed puerperal problems and midwives' failure to meet their professional competencies.

#### 5.3.10.2 Breast examination

For HIV-positive mothers, breast examination is important for identification of cracked nipples, mastitis and engorgement, which may promote or increase the chances of MTCT of HIV (KoS, MoH 2010a:39). This study revealed that only 56.2% had breast examinations and as many as 43.8% were not offered this post-natal intervention, putting these women at risk of having undiagnosed breast problems, which may result in infants acquiring HIV through unidentified breast problems.

This finding indicates that midwives provided poor quality PNC and that they failed to perform their professional responsibility and to follow national guidelines on prevention of MTCT of HIV. This study therefore refutes the findings of a study on

PNC in Swaziland by Warren *et al.* (2008:3) that 96% of post-natal mothers had breast examinations during the post-natal care consultation.

#### **5.3.10.3 Pelvic examination**

Regardless of the fact that the Ministry of Health (KoS, MoH 2010a:39) recommends that pelvic examination be offered to post-natal women to help avert unnecessary maternal deaths due to preventable causes like postpartum haemorrhage and puerperal sepsis, only 40.6% of the HIV-positive women taking part in the current study, reported pelvic examination. The majority (59.4%) were not offered this clinical intervention, rendering them vulnerable to develop life-threatening puerperal complications, like puerperal sepsis, which is the second biggest killer among HIV-positive post-natal women in Swaziland (KoS, MoH 2010d:7). This indicates a detrimental gap and the provision of sub-standard PNC services by midwives.

This finding is contradictory to findings by Warren *et al.* (2009:29), namely that the introduction of the new comprehensive post-natal care package improved performance of health providers by providing key maternal PNC interventions like pelvic examination.

#### **5.3.10.4 Blood pressure**

Midwives need to understand that pre-eclampsia or eclampsia is the second leading cause of maternal deaths among HIV-positive women in Swaziland, and they should do all possible to ensure that maternal deaths resulting from this known cause be averted, simply by measuring post-natal women's blood pressure (KoS, MoH 2011d:7). This study found that 14.8% of the respondents were put at risk of developing postpartum pre-eclampsia or eclampsia, because all maternal life-saving interventions against pre-eclampsia or eclampsia start with maternal blood pressure measurement, as this will inform the midwife of the necessary interventions. However, this finding indicates that these women were deprived of receiving quality PNC services, because of midwives' failure to be vigilant and aggressive in maternal blood pressure measurement.

### **5.3.10.5 Pulse**

Midwives should undertake this least invasive and most cost-effective clinical assessment observation to obtain valuable clinical information about the mother (Fraser & Cooper 2003:633). However, this study found that only 26.6% of the participants had their pulse rate counted, while the majority (73.4%) were not provided with this intervention.

This finding indicates that these women's heart functioning status was not monitored. As a result, puerperal complications which could have an effect on the heart and which could become life threatening during the post-natal period were not identified early (Leifer 2008:231). This shows that midwives in the current study offered compromised PNC, demonstrating failure to meet their professional competencies.

### **5.3.10.5 Temperature**

Measuring maternal temperature during the post-natal period is of vital importance as it can help with early identification and management of puerperal infections as well as opportunistic infections that are the major causes of deaths among HIV-infected women in Swaziland (KoS, MoH 2010f:57). Undertaking this clinical assessment strategy would ensure that these women are screened for fever, one of the indicators of puerperal infection and opportunistic infections with poor obstetric outcome for mothers (Fraser & Cooper 2003:633).

Therefore, it is necessary to undertake observations of temperature for post-natal women during the post-natal period, to identify early possibility of maternal infection, so that treatment or referral be made appropriately (ICM 2002:10). Surprisingly, 51.1% of the mothers had their temperature measured during the 3–14 day PNC visit. As many as 48.9% of these women who were at risk of having opportunistic infections as well as puerperal infections were never screened by midwives, indicating that these women who might have had either opportunistic infections or puerperal infections came into contact with midwives and went back home without being diagnosed and treated for these.

This indicates that midwives' failure to screen these women may be contributing to the high MMR in Swaziland, resulting from puerperal sepsis, which contributes about 13.8% towards MMR among HIV-positive cases (KoS, MoH 2010d:7). This finding indicates another dangerous gap, which may result in unnecessary and preventable maternal deaths.

### **5.3.11 Post-natal care services rendered to respondents**

All women should attend the postpartum visit within 3 to 14 days after birth, so that midwives may assess the normal process of involution and healing following delivery (ICM 2002:9).

#### **5.3.11.1 Adherence to antiretroviral medication**

Adherence to ARV medicines cannot be overemphasised; therefore, every individual using these medicines is to undergo an adherence counselling session not once or twice but every time she comes into contact with caring midwives, as this is helpful in keeping the viral load down, preventing opportunistic infections and preventing MTCT of the virus (KoS, MoH 2010a:41).

This study identified that 7.5% of the respondents were not offered adherence counselling to these HIV-suppression medication. Jaspan and Garry (2003:326) report that the use of and adherence to antiretroviral medication administered before, during and for short periods after delivery have decreased vertical transmission as a result, and avoidance of mixed feeding may improve infant outcome.

This finding indicates that these women were likely not to adhere to the prophylaxis, which may result in an increase in the viral load, recurrence of opportunistic infections and enhanced MTCT of HIV. It also reveals a gap in the provision of PNC services by midwives.

### **5.3.11.2 CD4 cell count test**

A health monitoring strategy for people living with HIV, including post-natal women, involves close monitoring of the CD4 cell count, to determine the effectiveness of the medication on women on ART, and eligibility to ART for women not on ART, as a low CD4 cell count may increase the risk or chances of MTCT of HIV (KoS, MoH 2010f:9). Moreover, the Ministry of Health (KoS, MoH 2010a:41) recommends that the CD4 cell count be tested within the first 14 days after delivery. However, this study found that only 32.3% of the HIV-positive mothers had a CD4 cell count. The majority (67.7%) were just not helped, indicating that women having treatment failure were not identified. Women with low CD4 cell count eligible for ART were also not identified. These may lead to recurrence of opportunistic infections, progression of the disease to AIDS, and increased chances of MTCT of HIV (KoS, MoH 2010a:41). This finding indicates a detrimental gap in the quality of PNC services rendered and of the prevention of MTCT of HIV.

### **5.3.11.3 Haemoglobin test**

Some of the ARV medications, like zidovudine, have side-effects that lower the individual's haemoglobin level. Testing of haemoglobin in the case of mothers who are exposed to these medications is important, because of the risk of anaemia, which can result in serious puerperal conditions if not promptly attended to (KoS, MoH 2010a:24). Therefore, midwives should test the haemoglobin level to out rule or identify and manage anaemia earlier, before it can become a life-threatening condition, especially in the case of those HIV-positive mothers who are exposed to zidovudine.

This study identified that of the 372 HIV-positive mothers who were to be tested for haemoglobin, only 29.0% had their haemoglobin tested. The majority (71.0%) who were at risk because of exposure to ARVs, especially zidovudine, which is recommended for HIV-positive pregnant women, were not tested for their haemoglobin, which is a matter of a prick with the new haemoglobin meters (KoS, MoH 2010f:71). This finding indicates a serious gap in post-natal services that may

lead to these women developing anaemia, opportunistic infections as well as puerperal infections, which may increase the chances of MTCT of HIV.

#### **5.3.11.4 Food supplements supply**

Nutritional problems can be seen in both asymptomatic and symptomatic people living with the HI virus. HIV has negative effects on the body's nutritional status, but adherence to a balanced diet has significant impacts, strengthening the immune system to fight opportunistic infections and delaying the progression of the disease (KoS, MoH 2010f:109). The Ministry of Health (KoS, MoH 2010a:25) in fact recommends that all HIV-positive postpartum mothers be provided with food supplements, specifically multivitamins, to boost their nutritional status. However, this study found that only 25.8% of the mothers were given multivitamins, and the majority (74.2%) were not given food supplements. These women were put at risk of developing opportunistic infections and increased the chances of MTCT of HIV due to their poor nutritional status. This reveals that midwives failed to adhere to national protocols, leading to the provision of poor-quality PNC.

#### **5.3.12 Post-natal care information given at 3 to 14 days**

Continuous health education is an integral part of quality PNC; therefore midwives should counsel, educate and advise post-natal women in all PNC contacts and/or at PNC visits (KoS, MoH 2010a:38).

##### **5.3.12.1 Hygiene**

This study revealed that 34.9% of the respondents were not counselled on hygiene, indicating that sub-standard PNC was rendered. This finding indicates that these women who had compromised immunity, and who were at risk of opportunistic infections, were not advised on the importance of hygiene, which might help in the prevention of some diseases like ascending infection to the uterus, which may result in uterine infection (Fraser & Cooper 2003:632).

This indicates midwives' failure to educate mothers on the importance of personal hygiene, especially perineal hygiene, and to provide the necessary cost-effective ways for making it clear that mothers can afford a specific technique or approach. This would ensure that risks to puerperal infections are prevented, which may include diarrhoea in the infant, and maternal and infant infection, which could lead to morbidity and mortality.

#### **5.3.12.2 Exclusive breastfeeding**

The WHO (2002b:3) and the Ministry of Health (KoS, MoH 2010a:46) recommend exclusive breastfeeding to infants of HIV-positive mothers as an ideal feed in view of poor weaning practices which prevail among mothers of infants in Swaziland and consequent early infant death. HIV-positive post-natal women in Swaziland are encouraged and supported to breastfeed their infants exclusively as per the Ministry of Health policy (KoS, MoH 2010a). Therefore, midwives should promote and counsel women on exclusive breastfeeding regardless of HIV status (KoS, MoH 2010a:46; ICM 2011:17).

This study found that 8.9% of the respondents were not counselled on exclusive breastfeeding. This indicates that these women were at risk of practicing mixed feeding, which enhances MTCT of HIV, just because midwives failed to follow national guidelines and to perform their professional responsibilities.

#### **5.3.12.3 Maternal danger signs**

Mothers should be educated on maternal signs and symptoms of life-threatening conditions that may arise during the postpartum period (e.g. vaginal bleeding, postpartum pre-eclampsia and fever) (ICM 2011:14). Results in this section will be discussed as follows:

##### **5.3.12.3.1 Vaginal bleeding**

This study found that as many as 38.1% of the participants were never educated by midwives on vaginal bleeding as an indication of a serious puerperal problem that

requires urgent medical attention as it is a life-threatening maternal danger sign, which is the global and national leading cause of maternal mortality (KoS, MoH 2011d:9). Midwives' failure to inform these women could lead to these women not regarding vaginal bleeding as a sign of a serious postpartum disorder that could lead to their death.

This indicates sub-standard PNC services rendered to these HIV-positive women by midwives. This finding confirms findings by Shongwe and Warren (2010:17) that postpartum women acknowledged receiving information on the dangers of vaginal bleeding following childbirth.

#### 5.3.12.3.2 Fever

This study identified that 39.4% of the participants were not educated on this symptom which could indicate serious and sometimes life-threatening puerperal problems, like puerperal infections and opportunistic infections, which are common among people living with HIV. These conditions are the leading causes of morbidity and mortality (KoS, MoH 2010f:119). This again indicates that sub-standard PNC was provided to these women, putting them at risk of developing life-threatening puerperal conditions, which may lead to unnecessary and preventable maternal deaths as well as infant HIV infection.

HIV-positive post-natal women were not only at risk of developing opportunistic infections but also of developing puerperal infections, due to their challenged immunity. This knowledge however never prompted midwives regarding the importance of teaching these women about fever, as an indication of infection (Leifer 2008:231).

#### 5.3.12.3.3 Dizziness and headache

As many as 61.6% of the respondents were counselled on dizziness and headache as signs indicative of puerperal problems, especially pre-eclampsia or eclampsia, because the Ministry of Health (KoS, MoH 2011d:9) states that signs and symptoms



indicative of pre-eclampsia should be attended to with urgency and delicacy, as pre-eclampsia or eclampsia is the second largest cause of maternal mortality among HIV-positive women in Swaziland.

About 39.4% of the respondents were not educated on these signs and symptoms of the cause of maternal deaths among HIV-infected women. This indicates that women may not immediately seek obstetric care if they experience dizziness and headache of different magnitude, because of lack of knowledge that these may be signs and symptoms of puerperal complications. This indicates a dangerous gap in the manner midwives rendered PNC, because these are signs and symptoms of a known postpartum killer among women living with HIV.

#### **5.3.12.4 Family planning counselling and condom usage**

This study found that 65.9% of the participants were counselled on the importance of dual contraception, and as many as 34.1% were put at risk of unplanned pregnancies and HIV re-infection, because midwives did not advise and educate them on available and accessible family planning options. This finding indicates that these women were put at risk of having unplanned pregnancies, which might have had negative effects on their health as they were recuperating from the current pregnancy. More so, because Fraser and Cooper (2003:673) state that unintended pregnancies can have long-lasting effects on the quality of life of HIV-infected mothers and their HIV-exposed children.

#### **5.3.12.5 Condom usage counselling**

The Ministry of Health (KoS, MoH 2010a:12) recommends that provision of family planning methods to HIV-infected women to prevent unplanned pregnancies is a necessity, and that it should be dual contraception (any family planning method plus condoms). However, this study found that 25.0% of the HIV-positive women were not counselled on the importance and usage of condoms. This implies that these women were at risk of HIV re-infection and also infection by different strains of HIV, which could lead to rapid progression of the disease to AIDS, thus increasing the risk of

MTCT of HIV and an increase in both maternal and infant morbidity and mortality (KoS, MoH 2010f:77). This also indicates poor quality of PNC services rendered by midwives.

#### **5.3.12.6 Early infant diagnosis of HIV**

Morbidity and mortality are very high among children who are infected with HIV, who are younger than 2 years old. It is therefore recommend that early infant diagnosis (EID) of HIV be done at the age of six weeks for all HIV-exposed infants, to ensure early enrolment into ART. If the infants are found to be HIV-positive, this could reduce the risk of infant morbidity and mortality (KoS, MoH 2010a:54). Therefore, mothers should be educated on the time and importance of early infant diagnosis of HIV, to ensure that they attend all visits to PNC clinics.

This study found that 10.5% of the HIV-infected women were not counselled on the importance of early infant HIV diagnosis for effective treatment and prevention of infant morbidity and mortality. This finding implied that these women might not attend PNC visits as expected because they were not aware of the importance of attending to their babies' health. Moreover, this finding revealed that midwives disregarded the national protocols available with regard to caring for HIV-exposed infants, especially in terms of early infant diagnosis (KoS, MoH 2010a:54), resulting in the provision of poor-quality PNC services.

#### **5.3.13 Post-natal care services rendered to HIV-positive mothers at the 6-week visit**

The 6-week postpartum visit is also important for mothers, as crucial PNC interventions are to be rendered to both the mothers and their infants, namely HIV testing of infants, initiation of co-trimoxazole prophylaxis, and clinical monitoring to ensure that mother and infant remain healthy and to prevent MTCT of HIV (KoS, MoH 2010a:43).

### 5.3.13.1 Vital signs

Vital signs are crucial indicators that enable midwives to determine the health status of mothers. Therefore, midwives need to take and record vital signs with every PNC contact (London *et al.* 2007:473).

#### 5.3.13.1.1 Temperature

It cannot be over-emphasised that HIV-positive post-natal women are at high risk of developing opportunistic infections and puerperal infections due to their low immunity (KoS, MoH 2010f:119). Leifer (2008:231) states that a rise in the body temperature among women may be indicative of puerperal infection or opportunistic infection. The midwife should therefore take and record the temperature for these women who are susceptible to puerperal infections and opportunistic infections.

However, this study found that only 28.5% of the women taking part in the research had their temperature measured during the 6-week PNC visit. The majority (71.5%) were at risk of developing puerperal sepsis without being diagnosed, which may lead to preventable maternal deaths, rapid progression of HIV infection to AIDS with increased risks of MTCT of HIV as well as maternal and infant morbidity and mortality, which are high in Swaziland. It also indicates that PNC of poor quality was rendered by midwives to these women, indicating that the country would continue to have unnecessary maternal deaths and paediatric HIV infections. This confirms the findings of a study by Warren *et al.* study (2006:79) that the few women across Africa who attend PNC services receive sub-standard obstetric care.

#### 5.3.13.1.2 Pulse

Pulse rate count is the least invasive and most cost-effective PNC intervention a midwife could undertake, to alert him or her about any puerperal condition that relates to the heart, which may become life threatening (Fraser & Cooper 2003:633). However, this study found that only 19.9% of the HIV-positive mothers had their pulse rate counted. The majority (80.1%) were never assessed for pulse rate. This

indicates a significant gap in the provision of PNC services, indicating that poor quality of PNC was rendered. This refutes the findings of a study on PNC in Swaziland by Warren *et al.* (2008:3) that 75%% of post-natal mothers had their pulse rate counted.

#### 5.3.13.1.3 Blood pressure (BP)

This study found that 80.4% of the post-natal women had their BP checked, while 19.6% were not offered this PNC intervention, which indicates another critical gap in the manner midwives rendered PNC. This finding contradicts the findings of a study on PNC in Swaziland by Warren *et al.* (2008:3) where it was found that 96% of post-natal mothers had their blood pressure measured.

The manner in which midwives rendered PNC to these women indicated that they were not aware that any rise in maternal blood pressure should be handled with care, because pre-eclampsia or eclampsia are the second largest causes of maternal deaths among HIV-positive women in Swaziland. They should do all possible to ensure that maternal deaths resulting from blood pressure abnormalities be averted, for instance through maternal blood pressure measurement (KoS, MoH 2011d:7).

#### 5.3.13.1.4 Physical assessment

The ICM (2002:10) states that quality physical assessment does not only enable midwives to have enough information about mothers, but it also helps midwives to identify and manage postpartum complications before they become life threatening.

### 5.3.13.2 History taking

The ICM (2002:1) states that midwives should take a comprehensive history on post-natal women, including pregnancy and intrapartum history, to monitor these women accurately and to attend to persistent puerperal problems and make relevant referrals if need be. Taking history at this time will enable the midwife to make a

sound clinical decision on the post-natal health status of the women, and the PNC intervention they may require (KoS, MoH 2010a:44).

Yet, in this study, as many as 54.6% of the HIV-infected post-natal mothers had their history not taken during the 6-week PNC visit. This finding indicates that these women were offered obstetric care of poor quality and/or even irrelevant PNC services as taking the post-natal history provides clinical baseline information for accurate and appropriate PNC interventions (Potter & Perry 2009:619).

Moreover, it also indicates that if these women had psycho-social problems, they had no opportunity to discuss them with midwives, for example usage of NVP prophylaxis if the woman has not disclosed her HIV-positive status to the spouse or partner and the reason for giving the child NVP prophylaxis. This might result in postpartum psycho-social problems. Unfortunately, they could not be assisted by the midwives due to midwives' failure to perform their professional responsibility of taking a comprehensive history on post-natal women (ICM 2002:1).

#### **5.3.13.3 Weight measurement**

The Ministry of Health (KoS, MoH 2010f:110) states that HIV infection increases nutrient requirements and sometimes reduces nutrient intake and absorption, thus increasing the risk of malnutrition and opportunistic infections among post-natal women living with HIV. Yet, this study found that 40.6% of the post-natal women did not have their weight measured, while malnutrition among HIV-infected people is common (KoS, MoH 2010f:109). This indicates midwives' failure to adhere to national guiding protocols, which might result in post-natal women living with HIV having undiagnosed malnutrition, leading to increased chances of MTCT of HIV and progression of the HIV infection to AIDS (KoS, MoH 2010a:44).

#### **5.3.13.4 Nutrition assessment**

As stated above, nutritional problems can be seen in both asymptomatic and symptomatic people living with HIV, as HIV has a negative effect on the body's

nutritional status. Adherence to a balanced diet, on the other hand, has a significant impact. Strengthening the immune system to fight opportunistic infections and delaying the progression of the disease is crucial (KoS, MoH 2010f:109). The Ministry of Health (KoS, MoH 2010a:25) recommends that nutrition assessment by means of the mid-upper arm circumference be conducted for post-natal women (KoS, MoH 2010a:25). This could help in the early identification and management of nutritional problems, thus delaying the progression of the disease and prevention of MTCT.

This study found that only 20.2% of the HIV-positive post-natal mothers were assessed for nutritional status. The majority (79.8%) of the respondents were not assessed for their nutritional status, although they were at risk of malnutrition, opportunistic infections, progression of the disease to AIDS and increased chances of MTCT of HIV. This indicates poor quality of PNC offered to HIV-positive women, and a large gap in the manner midwives provided PNC to these high-risk post-natal women.

Moreover, this finding indicates that women requiring food support were not identified to be enrolled on the supplementary food basket, through the World Food Programme or Ministry of Health facilities (KoS, MoH 2010f:118).

#### **5.3.13.5 Pelvic examination**

Fraser and Cooper (2003:628) state that conducting pelvic examination during the 6-week PNC visit may help to monitor the progress of post-natal women, as this may help with the identification and management of persistent puerperium problems among HIV-infected post-natal women who are at risk of having puerperal infections and opportunistic infections (KoS, MoH 2010a:44).

This study found that only 28.8% of the women had physical examinations, while the majority of the respondents (71.2%) were not physically examined. This finding indicates that HIV-infected women with persistent puerperium problems, which are

common among HIV-infected post-natal women and especially among those with opportunistic infections and puerperal infections, were not identified (KoS, MoH 2010a:44).

This also indicates that midwives may have not diagnosed women with puerperal sepsis, which may imply provision of PNC that was inaccurate and inappropriate resulting in these women receiving sub-standard PNC.

#### **5.3.13.6 Cervical cancer screening**

This study identified that only 17.7% of the HIV-positive post-natal women taking part in the research were screened for cervical cancer, and as many as 82.3% were not screened for this painful life-threatening condition. This once again revealed that midwives rendered sub-standard PNC. Whereas Chirenje (2005:270) states that women infected with the HIV have a higher prevalence of infection with the human papillomavirus. They are also more vulnerable to develop persistent opportunistic infections with multiple human papillomavirus types, resulting in a higher incidence and prevalence of cervical intraepithelial neoplasia lesions. They are therefore more likely to progress faster to invasive cervical cancer than HIV-negative women.

The manner midwives rendered PNC to these women indicated that women with signs and symptoms of cervical cancer were not screened regardless of the fact that they attended the 6-week PNC visit. This further implied that they received sub-standard PNC from midwives. Moreover, it seemed that midwives disregarded the Ministry of Health (KoS, MoH 2010a:44; KoS, MoH 2010f:74) recommendation that HIV-positive women be screened for cervical cancer during the 6-week visit.

#### **5.3.13.7 Condom supply**

Condoms provide protection from both HIV and sexually transmitted infections, transmission and acquisition. Male and female condoms are highly effective when used consistently and correctly every time (KoS, MoH 2010f:79). Male condoms are most easily available and accessible in Swaziland when compared to female

condoms (KoS, MoH 2010f:79). This may present challenges for HIV-positive post-natal women to use as is male controlled. In Swaziland, women do not have much power when it comes to sexual issues (KoS, MoH 2010f:79). The Ministry of Health (2010a:44) recommends that midwives should not only educate mothers on the use of condoms and their importance; they should also supply them to women. Midwives should also invite the partners to come to the facility for education on the importance of consistent and correct use of condoms.

At none of the facilities that were part of this research, there were any female condoms available, so that the findings in this section relate to male condoms. Only 40.1% of the HIV-infected post-natal women were given condoms, while more than half (59.9%) were put on risk of HIV re-infection, which in turn could lead to progression of the disease and increased chances of MTCT of HIV. This indicates a gap in the way midwives in which rendered PNC services. It also indicates that women who had disclosed their HIV-positive status to their sexual partners, who might have been HIV-negative could have been infected due to midwives' failure to give the condoms their partners (KoS, MoH 2010f:79).

#### **5.3.13.8 Prophylactic treatment and adherence to treatment**

The Ministry of Health (KoS, MoH 2010a:44) recommends that co-trimoxazole be given to all HIV-positive women regardless of their CD4 cell count. As stated earlier, co-trimoxazole has been shown to be effective in reducing mortality and morbidity in people of all ages living with HIV. It helped with the prevention of some opportunistic infections (like *Pneumocystis jirovecii* and other pneumonias, toxoplasmosis, bacterial infections, diarrhoea and malaria) (KoS, MoH 2010f:15).

This study found that 22.6% were not given co-trimoxazole prophylaxis, and 23.7% were not counselled on adherence to co-trimoxazole prophylaxis. This implied that these women were not protected against opportunistic infections, which are the leading cause of morbidity and mortality among people living with HIV. This might lead to unnecessary maternal morbidity and mortality, and increased chances of MTCT of HIV just because of failure of midwives to adhere to national guidelines.



### **5.3.13.9 Tuberculosis screening of HIV-positive mothers**

The Ministry of Health (KoS, MoH 2010f:57) states that tuberculosis is the most common opportunistic infection and leading cause of mortality among people living with HIV. Early detection and treatment of TB among people living with HIV are critical in the control of TB infection, preventing its spread among the general population. All people living with HIV should undergo screening for TB, including HIV-infected post-natal women, so that they may be initiated on treatment very early (KoS, MoH 2010a:58).

This study revealed that midwives managed to screen 96.5% of all eligible HIV post-natal women, indicating a 3.5% gap of post-natal women who were not screened for this common opportunistic infection. This finding indicates that some women who might have had TB were not screened, which could lead to them infecting their babies with TB.

### **5.3.14 Post-natal care information given to HIV-positive mothers at the 6-week visit**

Quality immediate PNC includes providing relevant health information to the mother, in a way that she would understand the health messages communicated to her family (WHO 2002a:300). The Ministry of Health (KoS, MoH 2010a:39) states that health education during provision of medical care is an integral component. This is also the case in PNC, where the mother has to look after herself and her infant.

#### **5.3.14.1 Support on chosen infant feeding option**

The Ministry of Health (KoS, MoH 2010a:55) recommends that mothers be supported and educated on the chosen infant feeding options, to ensure optimal infant feeding to minimise MTCT of HIV, prevention of malnutrition and promotion of growth and development be enhanced. In this study, 92.2% of the women were supported and educated on the personal infant feeding options they had chosen, while only 7.8% were not offered on-going support and education on their chosen

infant feeding options. This indicates another gap and failure of midwives to adhere to national guidelines, resulting in provision of sub-standard PNC to women. This indicates that these women might practice mixed feeding earlier than six months because midwives had failed to offer such vital information. This may result in acquisition of HIV by infants.

#### **5.3.14.2 Counselling on resuming sexual activity**

Fraser and Cooper (2003:632) state that the perineum is not easily viewed by woman herself and midwifery care should involve observing the progress of healing from any trauma. This will help the midwife provide relevant advice in terms of resuming sexual activity, as it may be dangerous or a risk to the woman and her partner. The Ministry of Health (KoS, MoH 2010a:44) recommends that midwives should counsel mothers on resuming sexual activity, because HIV-positive mothers may be easily re-infected or infected or they may re-infect their partners, resulting in the progression of the disease and increased risks of MTCT of HIV.

This study found that 71.8% of the HIV-infected mothers were educated on resuming sexual activity, indicating that 29.2% were not taught on this important issue, which might have detrimental effects on the health of mother, her partner and the infant, just because midwives had failed to adhere to national guidelines, resulting in the provision of poor PNC quality.

This finding indicates that HIV-positive mothers may have been re-infected or infected or they might have re-infected their partners, resulting in the progression of the disease to AIDS and increased risks of MTCT of HIV.

#### **5.3.15 Health care provided to HIV-exposed infants**

This part of the study discusses the results of the care rendered to HIV-exposed infants in the following way: care provided to HIV-exposed infants immediately after delivery, on discharge home, during the 3–14 day post-natal visit and at the 6-week visit after birth.

### **5.3.15.1 Care rendered to infants immediately after delivery**

The transition from intrauterine to extra-uterine life is a dramatic one and demands considerable and effective physiological adaptations by the baby to ensure survival; thus, the need for quality immediate care of the newborn (Fraser & Cooper 2003:709).

#### **5.3.15.1.1 Physical assessment**

The ICM (2011:16) states that midwives have knowledge and understanding of the elements of assessment of immediate conditions of the newborn (e.g. maintaining temperature, cord clamping and physical examination).

#### **5.3.15.1.2 Skin-to-skin contact**

The change from intrauterine life to extra-uterine line requires thermal adaption. The infant loses heat by evaporation (as amniotic fluid evaporates from the skin). Further heat is lost by conduction (when baby is in contact with cold surfaces) and by radiation (to cold objects in the environment) (Fraser & Cooper 2003:711). However, drying the baby minimises heat loss by evaporation, and skin-to-skin contact with the mother may assist the infant to conserve heat, as heat loss may result in hypothermia, which is a serious complication to deal with (KoS, MoH 2010a:36).

This study identified that only 45.2% of the infants were placed on their mothers' abdomens immediately after delivery, indicating that the majority (54.8%) were not put on their mothers' abdomens to ensure that the maternal body heat would maintain the baby's temperature and also to promote colonisation with the mother's innocuous skin organisms. This helps prevent hypothermia, which can be life threatening (Harrison 2010:26). This finding indicates that these infants were put at risk of experiencing hypothermia, which is a life-threatening complication for infants, as thermal control in neonates is poor (Fraser & Cooper 2009:765). This study thus contradicts the findings of a study on PNC in Swaziland by Warren *et al.* (2008:24)

that reported that temperature control by skin-to-skin contact significantly increased from 7% to 51%.

#### 5.3.15.1.3 Cord clamping

The umbilical cord is the lifeline of the baby in the first few minutes after birth; therefore the cord should be clamped securely as failure to comply may result in excessive blood loss from the baby, resulting in life-threatening complications. Midwives should clamp the cord properly immediately after birth, as an infant's blood volume is related to the time of cord clamping and the way it is clamped after birth (Harrison 2010:25).

Midwives should also advise mothers on how to observe their infants' umbilical cord for bleeding. They should not hesitate to report if they suspect any bleeding from the cord (KoS, MoH 201a:36). This study revealed that 94.4% of the infants' mothers were advised to be vigilant in monitoring their infants' umbilical cord for bleeding, indicating a gap of 5.6% of mothers who were not advised to observe their infants' umbilical cord. This may result in excessive blood loss from the baby leading to complications. This finding confirms the findings of a study on PNC in Swaziland by Warren *et al.* (2008:3) where 96% of the respondents acknowledged advice on cord monitoring from midwives.

#### 5.3.15.1.4 Physical examination

The baby's extra-uterine adaptation requires quality comprehensive physical examination to identify and/or ensure patent airways and warmth, as these require a drastic physiologic transition (ICM 2011:17). The use of the appearance, pulse, grimace, activity and respiration (APGAR) score informs midwives on how infants are adapting to the cooler extra-uterine environment at 1 minute and at 5 minutes. All abnormalities during the critical period require urgent, appropriate and accurate intervention, as failure or delay may result in life-threatening complications or even death (Fraser and Cooper 2003:714).

Yet, this study found that 69.1% of the infants underwent physical examination immediately after delivery, while as many as 38.9% of the infants were not physically examined after birth. This finding indicated a gap in the manner midwives provided care to infants and failure of midwives to apply the knowledge they obtained at college and failure to adhere to protocols, leading to provision of sub-standard care.

When correlating childbirth attendants and infant physical examination, a significant ( $p = 0.0159$ ) level of association between childbirth attendants and infant physical examination at immediate PNC was observed, indicating that birth attendants and infant physical examination are related.

#### 5.3.15.1.5 Breastfeeding initiation

Immediately after delivery, mothers should be supported to institute breastfeeding within 1 hour (KoS, MoH 2010a:36). This establishes a pattern of suckling and also promotes the flow of colostrum and mother–infant bonding (Harrison 2010:26). In this study, 56.2% were supported to initiate breastfeeding within 1 hour, but 43.8% were not supported to undertake this initiative, losing all the above advantages. This indicates that there was a gap in the provision of medical care to the infants in this regard.

#### 5.3.15.1.6 Tetracycline eye ointment

Fraser and Cooper (2009:758) state that antibiotic eye ointment should be given to infants as a preventive and prophylactic treatment against eye disorders, which may result in serious eye infections or even unnecessary or preventable permanent blindness. Therefore, the Ministry of Health (KoS, MoH 2010a:38) recommends that all infants be given eye ointment as a prophylactic treatment to prevent neonatal eye infections, like neonatal conjunctivitis.

It is the midwife's responsibility that infants be prevented against eye infections, especially in areas where sexually transmitted infections are prevalent (ICM 2011:17). However, this study found that 22.8% of the infants were not given an eye ointment. This indicates that these infants were put at risk of having eye infections,

like gonorrhoea and Chlamydia, indicating that poor quality care was provided to these infants.

#### 5.3.15.1.7 Vitamin K injection

Vitamin K helps the blood to clot and in infants it prevents serious bleeding disorders. Vitamin K should be administered immediately after delivery, to prevent a life-threatening bleeding disorder called haemorrhagic disease of the newborn (Fraser & Cooper 2009:758). The Ministry of Health (KoS, MoH 2010a:36) recommends that all infants be injected with vitamin K (0.5 milligram) to prevent haemorrhagic disease.

This study found that 79.6% were injected with vitamin K 0.5 milligram, while 20.4% of the infants were not given this preventive treatment, putting them at risk of developing life-threatening bleeding disorders. This further reveals midwives' failure to follow national guidelines, resulting in the provision of sub-standard care to these innocent infants and exposing them to bleeding disorders.

#### 5.3.15.1.8 Nevirapine administration

The WHO (2010a:28) recommends that all HIV-exposed infants be offered NVP prophylaxis. In the case of mothers on ART, infants should receive NVP until six weeks, and mothers who received ARV prophylaxis or nothing while breastfeeding should take NVP until one week after breastfeeding has stopped. The very same recommendation has been adopted by the Ministry of Health (KoS, MoH 2010a:49), as this prophylaxis helps reduce the risk of MTCT of HIV; thus promoting HIV-free infants.

Kwashie (2012:11) found that, since the adoption of the new guideline (the use of extended NVP) among HIV-exposed infants, the MTCT rate of HIV was at 2% in children aged 6–8 weeks. This is an achievement towards prevention of infant HIV infection, which could result in the reduction of infant mortality and improving the possibility of MDG 4 attainment. This study found that the majority (94.1%) were

taught on NVP prophylaxis. Appropriate care for babies born to HIV-positive mothers should be rendered. This includes the provision and administration of NVP prophylaxis, as it helps to reduce the risk of MTCT of HIV (ICM 2011:17).

This study further found that 83.6% of the infants were given NVP immediately after delivery. This indicates a 16.4% gap in the provision of care, delaying the country in its quest for virtual elimination of paediatric HIV by 2015. This finding indicates that infants could acquire HIV infection at the hand of skilled birth attendants, like midwives. When correlating childbirth attendants and infant NVP prophylaxis, a significant ( $p = 0.0011$ ) level of association between childbirth attendants and the giving of infant NVP prophylaxis was observed.

#### **5.3.16.2 Health information given concerning the baby**

It is important for mothers to receive factual information related to the care of the baby from the midwife. Failure to do so may result in morbidity and mortality. In the case of HIV-exposed infants, the mothers should be counselled on early infant diagnosis and co-trimoxazole prophylaxis and they should be supported on the chosen infant feeding option (KoS, MoH 2010a:36). The findings will be presented as follows: support on chosen infant feeding option, co-trimoxazole prophylaxis and early infant diagnosis of HIV.

##### **5.3.16.2.1 Support on chosen infant feeding option**

Exclusive breastfeeding for infants of HIV-positive mothers is recommended by the WHO (2002B:3) and the Ministry of Health (KoS, MoH 2010a:46) as an ideal feed in view of poor weaning practices which prevail among mothers in Swaziland (KoS, MoH 2010a:46) and early infant death. Post-natal women in Swaziland, irrespective of their HIV status, are encouraged and supported to exclusively breastfeed their infants as per the Ministry of Health policy (KoS, MoH 2010a).

On the other hand, exclusive replacement of infant feeds is recommended by the WHO (2001:8) to HIV-positive mothers who are unwilling to breastfeed exclusively. Mothers who practice exclusive replacement infant feeding should meet the acceptable, feasible, affordable, sustainable, safe (AFASS) criterion, which is an assessment tool for appropriateness of replacement infant feeding. Failure to meet the AFAAS criterion may increase morbidity and mortality among young infants. In this study, about 39.5% (n=147) of the mothers were taught about exclusive replacement feeding as a prophylaxis measure to MTCT of HIV during the puerperium.

This study found that 63.4% of the HIV-positive post-natal women were supported on their chosen infant feeding choice, indicating a 36.4% gap of mothers who were not supported on their chosen infant feeding option. This puts them at risk of practicing mixed feeding, which increases the chances of HIV transmission from breast milk (KoS, MoH 2010a:46). This finding showed that poor quality care was rendered to the infants, and midwives failed to perform their professional responsibility of educating mothers on principles of infant nutrition and infant feeding options, to ensure uninterrupted infant feeding (ICM 2011:16).

#### 5.3.16.2.2 Co-trimoxazole prophylaxis

This study found that 46.2% of the mothers were counselled on co-trimoxazole prophylaxis. The majority (53.8%) were not educated on this life-saving prophylaxis, regardless of the fact that co-trimoxazole significantly reduces morbidity and mortality by preventing opportunistic infections, and that mothers of all HIV-exposed infants should be counselled early on the time for initiation (at six weeks after delivery) (KoS, MoH 2010a:50). This finding indicates poor quality in the provision of care by midwives as well as failure of midwives to follow guidelines, which guide their practice and which may result in unnecessary infants' deaths from preventable opportunistic infections.



### 5.3.16.2.3 Early infant diagnosis of HIV

This study found that 46.5% of the HIV-positive women were educated on early infant diagnosis of HIV immediately after delivery. This is a cause for concern as mothers should send their children to a healthcare centre once they suspect abnormal symptoms in their babies, which may be suggestive of HIV. As many as 53.5% of the HIV-positive mothers who were part of this research were not given any information on early infant diagnosis of HIV.

The Ministry of Health (KoS, MoH 2010a:54) has stated that early infant diagnosis is an entry point for HIV-exposed infants to be enrolled on ART if found HIV-positive early. This will help with the reduction of infant morbidity and mortality, which is very high among HIV-infected children younger than 24 months.

### 5.3.17.3 Healthcare services provided to infants before discharge home

Quality care should be offered to all infants before they are discharged home, in order to prevent and manage risk conditions before they become life threatening to the infants. The elements of assessment of infants and principles of newborn adaptation to extra-uterine life should be followed by midwives (Fraser & Cooper 2009:775; ICM 2011:17).

#### 5.3.17.3.1 Physical examination

A physical examination before discharging a neonate home is mandatory in order to rule out birth trauma, congenital disorders and infections that may occur (KoS, MoH 2010a:38). Moreover, the baby's extra-uterine adaptation requires quality comprehensive physical examination to identify and/or ensure patent airways and warmth, as these require a drastic physiologic transition (ICM 2011:17).

Yet, this study found that only 44.9% of the infants were physically examined before being discharged home. The majority (55.1%) were put in danger of going home with health problems and/or potential life-threatening conditions, which could have led to severe complications and even death without being diagnosed by midwives. This

finding indicates that these infants were not monitored on how they were adapting to the extra-uterine environment before discharge because of the provision of poor quality care.

Additionally, these infants may have been discharged with undiagnosed health problems, which might have required urgent intervention, as failure or delay might have resulted in life-threatening complications (Fraser & Cooper 2003:714).

#### 5.3.17.3.2 Infants' temperature and pulse

Harrison (2010:27) states that infants' temperature should be measured and monitored to identify any health problems, which may include infection and failure of infants to maintain a normal temperature. This might need medical attention. This study found that 29.8% of the infants' temperature was not measured. This finding indicates that these infants were discharged home with possible unidentified health problems, like infection, which could lead to dangerous health problems. This finding confirms findings in a study on PNC in Swaziland by Warren *et al.* (2008:28) that 75% of the infants' temperature was measured and recorded.

Taking note of the infant's pulse rate is crucial in monitoring the adaptation of the infant to the cooler extra-uterine environment. This could inform midwives on how the infant is adapting to the extra-uterine environment (Leifer 2008:165). This clinical assessment strategy provides information related to the heart functioning and any abnormalities that require urgent medical attention, as delays may result in complications within a short time. Yet, this study found that the majority (69.5%) of infants were discharged home without being offered this life-saving intervention. This finding showed that heart abnormalities in these infants were not identified, resulting in provision of poor-quality care, and midwives' failure to adhere to national and international protocols.

### 5.3.17.3.3 Immunisations

According to the Ministry of Health (KoS, MoH 2010a:36), infants should be given BCG and polio vaccines, to prevent them against tuberculosis and poliomyelitis. Midwives should attend to the immunisation needs of the infants (ICM 2011:16). This study found that 96.0% of the infants were immunised against TB using the BCG vaccination, and 96.0% infants were given polio drops on discharge home from health facilities. This study confirms findings from a study by Warren *et al.* (2008:28) on PNC in Swaziland, that 96% of infants had been given polio and BCG vaccines in the post-natal ward.

### 5.3.18.4 Information given at discharge regarding care of infants

Comprehensive care includes the provision of factual messages from midwives, to ensure that morbidity and mortality are reduced by all possible means (ICM 2011:17). The section discusses the following sub-groups: identification of danger signs, advice on immunisation, counselling on co-trimoxazole, advice on NVP prophylaxis, and counselling on infant feeding options.

#### 5.3.18.4.1 Newborn care counselling

Mothers should be educated on the day-to-day care of the newborn by midwives, to ensure that the appropriate care is rendered to the baby as it adapts to the extra-uterine life, thus reducing risks of morbidity and mortality (ICM 2011:17). In this study, more than half of the respondents (55.9%) were counselled on newborn care.

#### 5.3.18.4.2 Counselling on identification of infants' danger signs

Mothers should be counselled on infant danger signs. These include hypothermia, high respiratory rate, fever, refusal to feed and a septic umbilical cord (KoS, MoH 2010a:38). Education of mothers about infants' danger signs in order to help mothers

know when to bring infants for medical care, is part of the essential competencies of midwives (ICM 2011:17).

#### 5.3.18.4.2.1 Hypothermia

Thermal control in the neonate remains poor for some time, owing to the immaturity of the thalamus. Temperature regulation is therefore inefficient and the baby remains vulnerable to hypothermia (Fraser & Cooper 2003:729). Midwives should therefore counsel mothers on the promotion and maintenance of normal newborn temperature through covering (blanket or cap) and environmental control (ICM 2011:16).

Mothers should also be made aware that, if their babies experiences such symptoms seeking medical help is of paramount importance, as this may result in life-threatening problems. However, only 41.9% of the mothers taking part in the current research were counselled on hypothermia in infants. This finding indicates that infants might not be brought to health facilities when necessary, resulting in delay in the provision of quality medical care, due to midwives' failure to advise women on the importance of maintaining warm temperatures for the infants and the urgent need for medical care if the infants suffer from hypothermia. It also indicates a serious and dangerous gap in the manner midwives rendered care to these infants.

#### 5.3.18.4.2.2 High respiratory rate

Mothers should be made aware of the predisposing factors and the likelihood of respiratory problems to newborns, as any respiratory disorder can be fatal (Leifer 2008:165). Therefore, midwives should counsel mothers on the importance of monitoring their infants' respiratory rate, as any change, may indicate serious medical conditions.

However, only 35.5% of the respondents were counselled on the danger of infants' high respiratory rate. The majority (64.5%) were not made aware of this condition that may result in life-threatening complications. This finding indicates that these HIV-exposed infants might not be brought to health facilities when having respiratory

problems, due to their mothers' lack of knowledge as they were not advised by midwives that high respiratory may indicate a serious problem and that it requires urgent medical care. This failure by midwives to provide holistically for these infants as guided by the national guidelines (KoS, MoH 2010a:38) might contribute to the high IMR in Swaziland.

#### 5.3.18.4.2.3 Fever

Neonates are vulnerable to infection owing to their immature immunity, particularly infection gaining entry through the mucosa of the respiratory and gastrointestinal systems. Infants should be protected against exposure that may result in infection, as this may have long-lasting adverse effects on the neonates' health (Fraser & Cooper 2003:730). Mothers should be educated to monitor their infants' temperature, and be taught that seeking health attention is vital, as fever may indicate serious problems within their babies. Any delay may result in serious and life-threatening problems. Yet, in this study it was found that 46.8% of the respondents were not counselled on infant fever, indicating that midwives continued to render compromised care. This finding is contradictory to a study on PNC in Swaziland by Warren *et al.* (2008:28), which found that 100% of the respondents were educated on newborn fever as an infant danger sign.

#### 5.3.18.4.2.4 Infant refusal to feed

Adaptation to extra-uterine life involves daily feeding. Any change from the normal infant feeding pattern may indicate a serious health problem for the baby, which might lead to complications like hypoglycaemia (Fraser & Cooper 2009:756). Infant feeding patterns should be monitored, as any abnormality may be indicative of gastrointestinal infections. Therefore, mothers should be educated about monitoring their infants' feeding pattern and changes should be noted and be reported to the nearest facility immediately.

This study revealed that only 37.1% of the respondents were counselled on refusal to feed as an infant danger sign. This indicated that midwives failed to fulfil their role

of educators, as the majority (62.9%) of HIV-positive mothers were not educated on this infant danger sign, revealing a significant discrepancy in the provision of care to infants.

#### 5.3.18.4.2.5 Septic umbilical cord

Neonates demonstrate a marked susceptibility to infections, but an infection to the umbilical cord or stump may be fatal, and if not urgently and competently attended to may result in the death of the infant (London *et al.* 2007:705). Midwives should educate mothers on how to clean and care for the cord to avoid infection, which may lead to serious effects. Mothers should be equipped with knowledge on the signs and symptoms of umbilical cord infection like redness around the cord. This study found that 32.0% of the respondents were not counselled on the danger of a septic umbilical cord. This finding indicates that these infants were at risk of not being brought to health facilities when they had foul-smelling cords or redness around the cord, which is indicative of cord infection and which could result in septicaemia. This finding is contradictory to the findings in a study by Warren *et al.* (2008:28) in Swaziland on PNC, where it was reported that 96% of the mothers of newborns were educated to observe redness around the umbilical cord.

#### 5.3.19.5 Healthcare services provided to infants at 3–14-day visit

Healthcare workers should always remain vigilant about signs and symptoms of HIV infection in all exposed infants during all contacts (KoS, MoH 2010a:51). Sub-groups will be used to present the findings, in the following manner: physical examination, infant feeding practice enquiry, enquiry about medication given to infants immediately after birth, infants weighed, vital signs and infant NVP given.

##### 5.3.19.5.1 Pulse rate count

It is crucial that the heart rate of the infant be closely monitored, so as to monitor how the infant adapts to the extra-uterine life or environment (London *et al.* 2007:704). This study found that, of the 372 infants who were part of this research,

only 6.7% had their pulse rate counted during the 3–14 day PNC visit. The majority (93.3%) of the HIV-exposed infants were not assessed for their heart rate as a monitoring strategy to extra-uterine adaptation. This finding indicates that infants with heart-related problems were not identified because no medical care was offered in this regard, as they were brought to health facilities and were attended to by midwives who offered sub-standard care.

#### 5.3.19.5.2 Respirations

One of the basic needs of an infant is a clear airway. Midwives should not only count respiration rate but they should also monitor the breathing pattern (ICM 2002:10). Leifer (2008:165) states that babies have immature, small, narrow airways and, as a result, they are susceptible to the development of breathing problems more easily. Counting their respiratory rate, by watching and counting for the rise and fall of the chest for a minute, may provide valuable information on the respiratory progress of the infants. Any increase in the number of breaths per minute may be an indication of distress, requiring urgent medical attention as failure to do so may result in serious complications and/or even death.

This study reports that only 5.4% of the HIV-exposed infants had their respirations monitored by midwives. The majority (94.6%) of the infants were not assessed for their respiratory extra-uterine adaptation, whereas they might have been at a high risk of developing breathing problems. This gap could have led to unidentified and unmanaged respiratory-related problems (Harrison 2010:27). This finding indicates a dangerous gap and poor quality of care rendered by midwives.

#### 5.3.19.5.3 Temperature

As documented previously, infants' temperature should be measured and monitored to identify any health problems, which may include infection and failure of the infant to maintain a normal temperature, which might need urgent medical intervention (Harrison 2010:27). Therefore midwives should measure infants' temperature with

every contact, as failure may lead to detrimental problems or life-threatening complications or even death.

Midwives should measure temperature with every contact, to identify potential risks like infection (Fraser & Cooper 2009:765). This study found that 61.8% of the infants had their temperature measured during the 3–14 day PNC visit, while 39.2% of the infants did not have their temperature measured. This indicates that infants with infection may have not been identified as a result of inappropriate medical care. This indicates that midwives rendered poor quality care.

#### 5.3.19.5.4 Weight

Measuring infants' weight may explain intermediate health variations, which can enable midwives to intervene appropriately and accurately, for example an infant who suddenly gains weight within six weeks. The link between birth weight and a range of health outcomes may reflect the workings of biological mechanisms with implications for human health (Wilcox 2001:1233). This may provide the midwives with information to monitor the infant's health very closely.

The Ministry of Health (KoS, MoH 2010a:51) recommends that infants' weight be measured for growth monitoring and for early identification and management of problems. Measurement of weight is a clinical tool to assess the infant's growth, and this should be done with every contact, to identify and manage problems very early (Harrison 2010:26). The current study found that 34.5% of the HIV-exposed infants were not weighed during the 3–14 day PNC visit. This implied that some of these infants who might have failed to thrive due to HIV infection were brought to health facilities where they were attended to by midwives, but the problems were not identified and the infants were therefore not offered relevant and appropriate medical care.



#### 5.3.19.5.5 Physical examination

Conducting a physical examination with every contact helps midwives to monitor the infant and to identify abnormalities that may require urgent and appropriate care. These may include congenital disorders and infections (KoS, MoH 2010a:38). Moreover, the baby's extra-uterine adaptation requires quality comprehensive physical examination to identify complications and/or to ensure that good physiologic adaption is established (ICM 2011:17). However, in this study it was found that only 45.4% of the infants who were part of this study underwent physical examination. This finding indicates that not all infants with HIV-related infections were identified. These infections might include seborrhoeic dermatitis, parotid enlargement and linear gingival erythema (LGE) (KoS, MoH 2010a:74), even though they were attended to by midwives.

#### 5.3.19.5.6 Infant Nevirapine given

All infants born from HIV-infected mothers should be initiated on NVP prophylaxis for at least six weeks in the case of mothers on ART, and for the duration of breastfeeding until one week after cessation of breastfeeding in the case of mothers who received ARV prophylaxis. The Ministry of Health (KoS, MoH 2010a:37) adopted a recommendation that HIV-exposed infants should receive NVP prophylaxis to prevent MTCT of HIV, thus promoting the survival of the infants and assurance of an HIV-free generation.

Therefore, midwives should supply this prophylaxis to all HIV-positive mothers as guided by the national guidelines. Failure to do so may have negative effects, like infant HIV infection through breast milk (KoS, MoH 2010a:36). The current study found that 91.7% of the infants were given NVP prophylaxis, while 9.3% were not supplied with NVP prophylaxis. This indicates that these infants were put at risk of acquiring HIV, even though they were attended to by midwives.

### **5.3.20.6 Healthcare services rendered to infants at 6-week visit**

The quality of care provided to infants at the 6-week visit after delivery is crucial, especially in the case of HIV-exposed infants, as there are medical interventions that should be done specifically at this time (infant HIV testing and initiation of co-trimoxazole prophylaxis) (KoS, MoH 2010a:44–45). This research project evaluated the quality of care rendered to the infants. Results are discussed below in the following sub-groups: vital signs (temperature, respirations, pulse and weight), prophylactic treatments, infant feeding option counselling, immunisation, physical examination.

#### **5.3.20.6.1 Temperature**

Harrison (2010:27) states that the infants' temperature should be measured and monitored to identify any health problems, which may include infection and failure of the infant to maintain a normal temperature. This might indicate the need for incubation. Measurement of an infant's temperature is crucial in the provision of quality care before discharge.

This study found that the majority (70.2%) of infants' temperature was measured and recorded, while 29.8% of the infants were put at risk of going home with unidentified health problems like infection, which could have led to dangerous health problems in these infants. This indicates that infants with infections, like upper respiratory infections (otorrhoea or discharge from the ear) which are related to HIV infection (KoS, MoH 2010a:74) were not diagnosed, resulting in no care being provided, which implied that their presence at health facilities was of little use.

#### **5.3.20.6.2 Pulse**

Taking note of the infants' pulse rate is crucial in monitoring the adaptation of infants to the cooler extra-uterine environment. This could inform midwives on how the infants are adapting to the environment, as this clinical assessment strategy provides information related to the heart's functioning. Any abnormalities require urgent medical attention, as delays may result in complications within a short time (London

*et al.* 2007:704). However, this study found that the majority (97.0%) of infants who were part of this research did not have their heart functioning status assessed. Infants with heart-related disorders were therefore not identified and not provided with medical care, which could have led to unnecessary infant deaths. This finding therefore indicates a gap and provision of sub-standard care by the midwives.

#### 5.3.20.6.3 Respiration

The assessment of infants for their respiratory rate can provide clear baseline information on how the infants are adapting to extra-uterine life, as any respiratory condition can be fatal (Fraser & Cooper 2009:750). Therefore, midwives should clinically assess all infants for respiratory adaptation to the extra-uterine life (ICM 2011:16). However, this study found that only 2.4% of the infants had their respiration counted during the 6-week PNC visit.

The majority (97.6%) were not assessed for respiration, indicating that infants with breathing disorders were not provided with urgent or any medical assistance; because midwives failed to provide comprehensive care. This means that bringing infants for medical care to these facilities was of little importance as almost no infants were screened for respiratory related problems.

#### 5.3.20.6.4 Weight

Birth weight is one of the most accessible and most misunderstood variables in the provision of care. A young child's weight during the first five years of life is strongly associated with mortality risk during the first year and with developmental problems in childhood and the risk of various diseases in adulthood. Epidemiological analysis often regards birth weight as the causal pathway to these health outcomes (Wilcox 2001:1233).

This study found that 91.9% of the infants had their weight measured during the 6-week PNC visit. However, 8.1% of the infants were not weighed. This indicates a gap in the manner midwives provided medical care for these infants and it further

indicates provision of poor quality care, as infants with failure to thrive were not identified and offered relevant and appropriate care. Midwives failed to adhere to national protocols or guidelines, as the Ministry of Health (KoS, MoH 2010a:51) recommends that infants' weight be measured for growth monitoring, for early identification and management of problems.

#### 5.3.20.6.5 Physical examination

Conducting physical examination of infants enables midwives to gain comprehensive clinical information about the infants' adaptation to the extra-uterine environment (KoS, MoH 2010a:53). However, this study found that 39.9% of the HIV-exposed infants were physically examined; an indication that midwives could not identify infants with problems, like persistent generalised lymphadenopathy, which might be indicative of HIV infection. This implies that midwives rendered compromised care to these HIV-exposed infants, who were at risk of developing opportunistic infections.

#### 5.3.20.6.6 Immunisation

The Ministry of Health (KoS, MoH 2010a:36) recommends that all infants be given polio, diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza type B vaccine, as a 6-in-1 injection or pentavalent injection. The ICM (2011) states that midwives should attend to the immunisation needs of infants (ICM 2011:16). This study found that 96.0% of all infants were given immunisation according to the national immunisation schedule during the 6-week PNC visit, confirming the WHO (2012) statistics on Swaziland immunisation coverage above 96%.

#### 5.3.20.6.7 Infants initiated on co-trimoxazole

Co-trimoxazole prophylaxis is safe, inexpensive and highly effective in reducing morbidity and mortality among HIV-exposed and HIV-infected infants and children, and the WHO recommends that HIV-exposed infants be started on co-trimoxazole prophylaxis at 4–6 weeks of age, in order to provide adequate prevention against early opportunistic infections (UNICEF and WHO 2009:1). Moreover, the Ministry of

Health (KoS, MoH 2010a:50) states that all HIV-exposed infants should be counselled and be initiated on co-trimoxazole prophylaxis at six weeks of age.

This study found that 92.2% of the 372 HIV-exposed infants who were part of the study were initiated on co-trimoxazole prophylaxis during the 6-week PNC visit. As many as 7.8% of the infants were not initiated on co-trimoxazole. This indicates that midwives deprived these infants of access to life-saving prophylaxis, making these infants more vulnerable to opportunistic infections. This is another indication of midwives' failure to adhere to national guidelines and provision of substandard care.

#### 5.3.20.6.8 Infants tested for HIV

As documented above, morbidity and mortality are very high among children who get infected with HIV, who are younger than 2 years, as a result the Ministry of Health (KoS, MoH 2010a:54) states that midwives should collect infant blood samples by dried blood spot for HIV testing, to ensure early diagnosis of infants and early enrolment in ART. A follow-up appointment for results should be made with the mother, because not giving her the infant's HIV result is as good as not testing the infant. This study found that 93.0% of the HIV-exposed infants were tested for HIV during the 6-week PNC visit, indicating that 7% of eligible infants were not tested, which could lead to unnecessary infant deaths, just because midwives failed to follow guidelines resulting in this gap and the provision of sub-standard care. The WHO (2010a:39) and the Ministry of Health (KoS, MoH 2010a:54) recommend that early infant diagnosis of HIV be done at the age of six weeks for all HIV-exposed infants to ensure early enrolment into ART, if the infants are found to be HIV-positive. This will reduce the risk of infant morbidity and mortality (KoS, MoH 2010a:54).

#### 5.3.20.6.9 Infants given Nevirapine prophylaxis

Approaches to reduce or prevent the risk of post-natal transmission through breastfeeding include the use of ARVs, assessment of risk factors for mother-to-child

transmission, and the efficacy of the interventions to be applied during the post-natal period (Rollins & Meda 2004:192; KoS, MoH 2010a:40).

The WHO (2010a:28) recommends that all HIV-exposed infants be offered NVP prophylaxis. For mothers on ART, their infants should receive NVP until six weeks, and for mothers who received ARV prophylaxis or nothing while breastfeeding, should take NVP until one week after breastfeeding has stopped. The very same recommendation has been adopted by the Ministry of Health (KoS, MoH 2010a:49), as this prophylaxis helps reduce the risk of MTCT of HIV, thus promoting HIV-free infants.

Kwashie (2012:11) reveals that, since the adoption of the new guideline (the use of extended NVP) among HIV-exposed infants, the MTCT rate of HIV dropped from 14% to 2% in children age 6–8 weeks. The Ministry of Health (KoS, MoH 2010a:49) states that all infants born to HIV-infected mothers should be given NVP for at least six weeks in the case of mothers who are on ART, and until one week after cessation of breastfeeding, in the case of mothers who received ARV prophylaxis. This study found that 94.4% of the HIV-exposed infants, who were part of the study, had their NVP prophylaxis refilled during the 6-week PNC visit.

#### **5.3.20.6.10 Infants given Isoniazid prophylactic therapy (IPT)**

Infants with household TB-active contacts should be given IPT for 6 months after active TB infection has been excluded (KoS, MoH 2010a:58), so that they can be prevented from being infected with TB, thus reducing infant mortality and adherence to the national guidelines (KoS, MoH 2010a:58). The Ministry of Health (KoS, MoH 2010f:57) states that tuberculosis is the most common opportunistic infection and leading cause of mortality among people living with HIV. Early detection and treatment of TB among people living with HIV is critical in the control of TB infection, preventing its spread among the general population. All people living with HIV should undergo screening for TB, including HIV-infected post-natal women, so that they can be initiated on treatment very early.

Due to neonates' vulnerability to infection owing to their immature immunity, particularly those infections gaining entry through the mucosa of the respiratory system, they should be protected against exposure, such as in terms of TB, as this may have long-lasting adverse effects on the neonates' health (Fraser & Cooper 2003:730). This study found that the mothers of the 13 infants who were found to be have active TB and who were eligible for IPT, according to the Ministry of Health (KoS, MoH 2010a:58), only 44.4% were given the IPT for their infants while the majority (53.6%) were eligible for this prophylaxis but were not given the medication, exposing their infants to TB infection. This finding indicates that infants, who could have been protected against TB infection, could easily get TB just because midwives failed to follow guidelines. This is another gap and provision of compromised medical care that may have adverse effects on these innocent infants.

#### **5.3.21 Respondents' waiting time before being attended by midwives**

This study found that as many as 45.6% of the respondents reported to have waited more than an hour before being attended by midwives. This indicates that mothers, who had opted to use their one-hour lunch break to attend PNC services, could have left before being attended to. Moreover, this long duration before receiving or accessing PNC services, might result in women telling each other about it, giving rise to poor attendance of PNC services and HIV-positive women and HIV-exposed infants missing key post-natal interventions. These include CD4 cell count monitoring, haemoglobin level testing, ARV and co-trimoxazole prophylaxis, early infant diagnosis and health information and messages.

#### **5.3.22 Mothers' perceptions on post-natal care services**

The perspective of the respondents on the importance of PNC was investigated in this study. It was found that 94.0% agreed that attending to PNC services was important compared to just 3.6% who disagreed that attending to PNC services was of great value to themselves and their infants. This finding indicated that HIV-infected women valued the post-natal interventions that were offered to them and their infants. These findings confirmed the results of a study by Dhaher *et al.* (2008:8–26)

in India that showed that 66.1% of respondents considered PNC necessary although only 36.6% obtained PNC services. The way mothers view PNC services has an influence on attending and coming for appointments, therefore, in this study, mothers' satisfaction, the extent of mothers' expectations met, benefits of PNC, willingness to encourage other HIV-positive mothers to attend PNC visits, understanding of MTCT of HIV and future attendance of PNC if they can have babies, were studied. The results are presented in the paragraphs that follow.

#### **5.3.22.1 Respondents' satisfaction with post-natal care**

In a study by Dogba and Fournier (2009:1485), they report that women's level of satisfaction with care received varied according to their expectations, social class and educational level. Women expressed general dissatisfaction. Although some women, showed gratitude to staff who saved their lives, but overall, the interpersonal interaction was very unsatisfactory for patients. The poor quality of care and general dissatisfaction influence women's use of health services and compliance with treatment and treatment schedules. The current study was in contradiction with the above-mentioned study as respondents generally reported satisfaction with PNC services, as 47.8% of the respondents strongly agreed that the PNC services and information rendered satisfied them, and 38.3% agreed. As many as 8.1% disagreed. This finding indicated that the quality of care rendered to these women and their infants general satisfied the women, as overall 86.1% were satisfied.

#### **5.3.22.2 Respondents expectations towards post-natal care**

Post-natal women, especially HIV-infected women, attend PNC services because they had expectations of midwives, even though they did not inform the midwives about their personal expectations. They expected that midwives would provide interventions that would prevent MTCT of HIV; they expected midwives to test their infants and to find them to be negative. Therefore, it is the duty of midwives to meet these expectations, through services, education and counselling sessions (ICM 2011:15).



This study found that of the 372 HIV-infected post-natal women, 87.9% agreed that their expectations were met. From the analysis of this study, this satisfaction may indicate that mothers were concerned about the provision of post-natal interventions that would prevent chances of MTCT of HIV, as it seems this is where midwives did their best compared to the other post-natal interventions, like physical assessment and examination.

#### **5.3.22.3 Respondents' views on post-natal care benefits**

The perspective of the respondents on the importance of PNC was investigated in this study. It was found that 94.0% agreed that attending PNC services was important compared to just 3.6% who disagreed that attending PNC services was of great value to themselves and their infants. These findings confirm results of a study by Dhadher *et al.* (2008:8–26), which showed that, although 66.1% of respondents considered PNC necessary, only 36.6% obtained PNC services.

#### **5.3.22.4 Respondents' reaction to encourage other HIV-positive mothers to attend post-natal care**

Disclosure among HIV-positive mothers should be encouraged to promote well-being of the mothers, to adhere to treatment, and to encourage others to participate in this life-saving strategy, to reduce both maternal and infant morbidity and mortality (KoS, MoH 2010a:21). This study found that 93.2% of HIV-positive women agreed that they would encourage other post-natal women to attend PNC services. This confirms findings from a study by Shongwe and Warren (2010:17) in Swaziland, where it was found that almost all postpartum women said they would encourage their friends to attend PNC services.

#### **5.3.22.5 Respondents' understanding of mother-to-child-transmission risk**

For good adherence to prophylaxis, an understanding of the importance of the prophylaxis to both the mother and the infant, and attendance of appointments, mothers should be educated and counselled on all the care they are receiving (KoS,

MoH 2010a:21). The majority (96.0%) of respondents agreed that, after the receiving the PNC services and information, they understood clearly the risk of MTCT of HIV. This might have contributed to these women attending PNC services. However, the specific reasons for them attending PNC services were explored, and these were discussed in 5.3.8 of this chapter.

#### **5.3.22.6 Respondents' willingness to attend post-natal care visit in future**

Adequate knowledge should be imparted to HIV-positive mothers, so that myths and false statements can be cleared to ensure that mothers clearly understand the essence of PNC, for future usage of PNC services (ICM 2011:15). The current study revealed that 95.1% agreed that should they give birth again they would attend PNC visits. This finding may indicate an understanding of the importance of PNC services to their lives and to their babies' lives. This confirms the findings from a study by Shongwe and Warren (2010:17) on practical experiences of post-natal women in Swaziland, where 90% of the respondents reported that they would use PNC services in the future.

#### **5.3.23 Reasons for attending post-natal care services**

Anecdotal reports suggested that many postpartum mothers return six weeks after delivery, mainly for child immunisation and sometimes for family planning rather than for targeted PNC and HIV-related PNC services. Sometimes mothers were asked how they were feeling but they were not given physical examinations (Warren *et al.* 2008:8).

This research found that of all the respondents who attended PNC services –

- 26.6% attended because they were seeking healthcare and child-growth monitoring services;
- 13.4% were motivated by health education sessions rendered by midwives during antenatal care and the post-natal period;
- 31.8% came solely for their infants' immunisations;
- 8.6% came because of infants' immunisation and DBS; and

- 19.6% came because they wanted to prevent MTCT of HIV at all possible costs.

This confirms the above findings from a study by Warren *et al.* (2008:8) in Swaziland on PNC, namely that many postpartum mothers return six weeks after delivery, mainly for child immunisation, as the current study reported that as many as 31.8% came solely for their infants' immunisations.

#### **5.3.24 Possible barriers to post-natal care attendance among HIV-positive mothers**

Low utilisation of PNC services has been associated with women's lack of knowledge about its importance, their lack of perceived need (especially if they are feeling well), their low level of education, poverty, lack of access to healthcare facilities providing PNC, lack of appointments or recommendations from healthcare providers to obtain PNC, poor attitude of healthcare providers, or women's tendency to give priority to the health needs of their infants rather than their own (Dhaher *et al.* 2008:9).

The Swaziland Central Statistical Office (KoS, CSO 2008:125) reports that many factors prevent women from accessing health care. These include getting permission to go for treatment, getting money for treatment, distance to healthcare facilities, having to take transportation, not wanting to go alone, availability of healthcare providers and concern about the availability of medication. The current study confirmed the above-mentioned findings as it found that barriers to HIV-positive women not attending PNC included:

- midwives' negative attitude (16.7%);
- fear of HIV testing and counselling (HTC) and possible child HIV-positive status (9.4%);
- mothers' lack of knowledge (13.4%);
- long waiting time (16.7%);
- stigma (3.8%);
- transport fees (10.5%);
- work environment (2.7%); and

- different other challenges (3.5%).

Of the women, 23.4% stated that they experienced no barriers. These findings are in line with a qualitative study done by Kebaabetswe (2007:358) in Gaborone, Botswana on barriers to participation in a PMTCT programme. The study identified fear of testing and knowledge of HIV status, negative attitudes of health workers, and lack of male partners' support as barriers to participate in the PMTCT programme.

### **5.3.25 Post-natal care services integration**

The Ministry of Health is of the opinion that health services should be integrated to help reduce the time spent by clients at healthcare facilities. The current study found that the majority of respondents (85.2%) reported that their PNC services were not done in one room. This finding indicates that integration of PNC care services is still a challenge at the health facilities that were part of this study. This finding is in contradiction with the study by Warren *et al.* (2008:48) that integration of PNC services into maternal and child health services was gaining momentum in Swaziland, as only 14.8% reported that their PNC services were done in the same room. It also confirms the finding by Horwood, Haskins, Vermaak, Phakathi, Subbaye and Doherty (2010:997) that key PMTCT interventions were not available at the immunisation clinics.

### **5.3.26 Midwives' communication skills evaluation**

Warren *et al.* (2008:50) state that effective strategies for communication skills related to healthy behaviours on maternal and child health care are essential both at facility and community level, including strengthening of counselling and negotiation skills of midwives. The current study reports that 42.7% reported that their communication with midwives was excellent, 40.1% said that it was good, 14.5% reported that it was just reasonable, 2.7% stated that it was bad and 0.3% stated it was extremely bad. These findings indicate that the manner in which midwives provided PNC services could allow about 97.3% of the respondents to express their concerns and ask questions freely.

### **5.3.27 Capacity of health facilities to render quality post-natal care services**

If quality care is to be rendered, the basic human resources, material resources and organisational resources should be available (Morestin *et al.* 2009:1). The current study identified the following variables regarding the structure of services. These sub-topics are discussed as follows:

#### **5.3.27.1 Human resources**

The human resource availability as indicated in Table 4.12 identified that 100% have midwives working in the PNC units, and all the midwives had been oriented to the Ministry of Health guidelines, and in all the facilities there were supervisors. These findings indicate that midwives had knowledge about the recommendations from the Ministry of Health (KoS, MoH 2010a1-78) guidelines concerning the key PNC interventions to be rendered to post-natal women. However, the above PNC services that were rendered to respondents revealed that these midwives were oriented to the Ministry of Health guidelines.

Moreover, this also indicates that the supervisors were not fulfilling their mentoring and supervisory roles, as was evident from the quality of care that was rendered to respondents. These findings confirm the results of a study by Warren *et al.* (2008:2) that showed that generally all health facilities in Swaziland had the capacity to offer quality PNC services, including midwives. However it was discouraging to note that midwives were not adhering to the Ministry of Health guidelines, yet, they were trained and supervised to render quality PNC services.

#### **5.3.27.2 Material resource analysis of post-natal care**

If quality care is to be rendered, the basic material resources should be available, because any shortage is associated with fatal outcomes (Morestin *et al.* 2009:4). Even though almost all the health facilities had the basic material resources, sub-standard care was rendered, indicating midwives' failure to adhere to protocols. The current study identified that all the health facilities that were part of this study had all the necessary basic materials to provide quality PNC services. These included NVP

syrups, NVP clips, NVP syringes, co-trimoxazole tablets, co-trimoxazole syrups, zidovudine, lamivudine tablets, BCG vaccine, polio drops, HIV test kits, Polymerase chain reaction tests, functional telephones, sterilisers, electricity, DPT vaccine, vitamin A, thermometers, sphygmomanometers, examination beds, safe water and ambulances.

These findings are in line with the Service Availability Mapping Report of the Ministry of Health (KoS, MoH 2010b:69; KoS, MoH 2011a:39), which reported that basic equipment availability was more than 90% in all facilities. Of the facilities, 83.5% had PMTCT guidelines in place, 99.6% had electricity, 84% had functional telephones (KoS, MoH 2010b:182), 96.7% had co-trimoxazole available, 95.3% had NVP, and 92% had zidovudine in stock during the survey (KoS, MoH 2010b:184). Of the health facilities in Swaziland, 64.53% provide PNC with Shiselweni region leading in the proportion of facilities providing PNC. Manzini, Hhohho and Lubombo were found to be 54.81%, 66.20%, 69.81% compliant respectively (KoS, MoH 2010b:190).

This study found that not all the facilities had Isoniazid tablets and Isoniazid syrup available, even though the Swaziland government and developmental partners had pledged to ensure availability of basic material to health facilities. About 56.0% of eligible infants in this study were not given IPT, indicating a large gap and provision of sub-standard care.

#### 5.3.27.3 Organisational resources

This study reported that all the health facilities that were involved in this study had ANC cards, child welfare cards, PNC registers, Ministry of Health guidelines and central medical stores ordering forms. This confirms a study by Mazia *et al.* (2009:257) that state that generally all facilities in Swaziland have the capacity to provide quality PNC. Facilities have rooms, equipment, medicines and supplies.

However, a gap was noted in terms of quality assurance strategies as only 55.6% of the health facilities that participated in this study had minutes for quality assurance meetings, and none of the facilities had training attendance lists. This finding

indicated that these facilities were likely to make the same mistake repeatedly, because they did not have meetings to analyse their data or the way they provide services to clientele.

#### 5.3.27.4 Quality assurance mechanism

The Ministry of Health (KoS, MoH 2010a:60) states that rigorous and independent quality assurance strategies (submission of monthly summary reports and quality assurance meetings) should help the country attain the global expectation (MDGs) by 2015. The strategies are discussed in the paragraphs below.

#### 5.3.27.5 Submission of monthly summary report

This study found that all the facilities that were involved in this study submitted their submitting monthly PNC reports to the national office. This finding indicates that the health facilities were not using their data to evaluate their PNC interventions, identify areas of improvement, to ensure that their PNC services were in line with the Ministry of Health (KoS, MoH 2010a:36-58) standards. Moreover, this finding indicates that even the national monitoring and evaluation unit is not analysing the data and provide feedback to the sites. This might delay the country towards achieving MDG 4 and 5, as well as the virtual elimination of paediatric HIV by 2015 (KoS, MoH 2010a:10).

#### 5.3.27.6 Functional maintenance units

This study found that all health facilities that were part of this study had functional maintenance units. This finding indicates that any breakage to bio-medical resources could be repaired immediately ensuring that provision of health services would not be interrupted.

#### 5.3.27.7 Health–community linkage

Health services should be linked with the communities that are being served, to ensure high uptake of health initiatives like the use of PNC services (Morestin *et al.* 2009:7). This helps with the follow-up of clients, enabling mothers to receive uninterrupted quality PNC. This study found that all the health facilities that were involved in this study were linked with their communities either through community expert clients, mentor mothers and/or rural health motivators. This finding indicates that basic health information could be accessed by community members within their communities, and lost to follow up post-natal clients, could be traced to the community to ensure quality life and adherence to treatment.

#### 5.3.27.8 Medical supplies ordering forms

This study found that all health facilities that participated had medical supplies ordering forms from the central medical stores. This finding indicates that all these facilities could order medical supplies whenever there was a need to ensure uninterrupted medical supplies. This could be the reason why all the facilities generally had all the basic medical supplies for rendering quality PNC services.

#### 5.3.27.9 Measurement of clients' satisfaction

For the health facilities to determine how well they can meet the expectations of their clientele, to improve and replicate practices that their clientele like, thus ensuring that quality care is practiced and promoted, health facilities should have measurement of their clients' satisfaction (Morestin *et al.* 2009:11). Strategies used by facilities to get such information were investigated. This study found that the majority of units (78.8%) did not have any strategies to measure their clients' satisfaction. This finding indicates that midwives could continue to provide sub-standard care because there was no way they were to get the feedback that their clientele was not satisfied by the quality of PNC services they were offering.



#### 5.3.27.10 Measurement of maternal mortality and infant mortality rates

This study found that none of the facilities that were part of this study had any measurement or strategy to measure MMR and IMR. This finding indicates that these facilities could not be aware of how much they were contributing to the high MMR and IMR. Moreover, they could not devise any strategy to curb the high MMR and IMR, because they might not be aware that the way they render PNC services could contribute to these numbers.

### 5.4 WEAKNESSES OF THE STUDY

The study was conducted at nine health facilities, yet there is a total of 201 healthcare facilities in Swaziland. Therefore, the results of the study cannot be generalised for the whole country, as the sample was too small.

- The duration of some interviews was long: 1 hour 45 minutes. Reasons for the long interviews were to allow respondents to express emotions and for midwives to render support and counselling that were needed by respondents.
- The study failed to identify the condition of the uterus, including blood loss yet postpartum haemorrhage is the leading cause of maternal mortality (UNFPA 2009:11). Midwives should be able to detect and manage postpartum haemorrhage.
- During the course of the study, the national laboratory ran out of reagents stock necessary in HIV care of clients, due to the country's financial crisis. This led to a sudden reduction of post-natal women who were tested for CD4 cell count and haemoglobin.
- It was difficult to attain confidentiality as many health workers were involved in the care of respondents (midwives, laboratory technicians and pharmacists) but health workers were urged to share confidentiality in line with the ethical codes of a multidisciplinary team (KoS, MoH 2010e:32). Additionally, there was limited infrastructure to enhance confidentiality.

- Some respondents were reluctant to sign the consent form for participating in the study for fear of being identified, although the respondents were assured of confidentiality.

## **5.5 RECOMMENDATIONS**

Based on the findings, the researcher makes the following recommendations for improving the quality of PNC rendered to HIV-positive women and their HIV-exposed infants.

### **5.5.1 Post-natal care services**

To improve the quality of PNC rendered to HIV-positive mothers by midwives, the Ministry of Health, especially the SRH unit, should:

- Ensure that the healthcare providers, especially midwives, are capacitated through pre-service and in-service training on PNC and the new package of PNC, and updates on PNC interventions.
- Introduce a comprehensive skills audit of midwives to identify areas of priority in the provision of quality PNC.
- Support supervision and clinical mentoring should be strengthened to assist midwives to adhere to the PNC guidelines and to master the necessary skills in providing quality PNC services.
- Conduct training in PNC, and monitoring and evaluation of PNC services rendered.
- Work collaboratively with the developmental partners to put in place in basic medical supplies to ensure that resources are available for delivering quality PNC services.
- Strengthen midwifery curriculum particularly on PNC in order for midwives to render quality care.

### **5.5.2 Nursing education**

To ensure that midwives have the necessary knowledge and skills to render quality PNC services, nursing education should:

- Revise/update the midwifery curriculum and include current issues on sexual and reproductive health, including PNC, in order to equip graduates with knowledge and skills necessary to render quality PNC services.
- The skills of midwifery educators are updated in line with competencies as described by the ICM (2011:1-13).

### **5.5.3 Midwifery practice**

To improve the quality of PNC interventions, the midwifery practice should ensure that:

- In-service education is conducted to update knowledge and skills related to postnatal care in implementing the Ministry of Health guidelines and in attaining the Millennium Development Goals 3, 4 and 5.

HIV positive women and their young babies receive quality PNC in health care facilities and in the communities and offer prophylactic treatment which will limit MTCT of HIV virus.

### **5.5.4 Patient education**

To improve the quality of PNC, midwives should strengthen client education:

- At the health care facilities where all HIV-positive post-natal women should be counselled, supported and managed appropriately.
- Community education should be strengthened in order to increase awareness and support for mothers living with HIV.

## **5.6 RECOMMENDATIONS FOR FURTHER RESEARCH**

Further research is recommended in the following areas:

- Assessment of midwives' skills in providing PNC to HIV-positive mothers and their HIV-exposed infants.
- A qualitative study to determine the accuracy and the skills of midwives during the provision of PNC services.
- Determining the support and counselling provided for HIV-positive clients during the post-natal period to ensure commitment to prophylaxis.
- A longitudinal study to evaluate the outcomes of HIV-exposed infants, whose mothers attended PNC.
- A replication of this study using a larger sample in order to generalise the results.

## **5.7 CONCLUSION**

This study reported gaps in the provision of quality PNC services provided to HIV-positive mothers and their HIV-exposed infants during the first 6 weeks of postpartum. The findings of this study have informed SRH units on the compromised quality of care provided to HIV-positive mothers and their infants, and recommendations on improving the quality of PNC have been made.

Additionally, the need to strengthen pre-service and in-service midwifery education in PNC services in an effort to improve maternal and neonatal outcome. The findings of the research reveal a need to strengthen pre-service and in-service education on PNC, in line with the mandate from the Ministry of Health. This will enhance professional development and ultimately improve the health status of mothers and their infants.

## 6. REFERENCES

- Africa Health Workforce Observatory. 2009. *Human resource for health country profile: Swaziland*. From: [www.hrhobservatory.afro.who.int/.../Country\\_profile\\_Swaziland.pdf](http://www.hrhobservatory.afro.who.int/.../Country_profile_Swaziland.pdf) (accessed 30 October 2011).
- ANNECCA (African Network for the care of Children Affected by HIV/AIDS). 2011. *Handbook on paediatric AIDS in Africa*. 2<sup>nd</sup> edition. Kampala: ANNECCA
- Anwar, I, Sami, M, Chowdhury, ME, Salma, U, Rahman, M & Koblinsky M. 2008. Inequality in maternal health-care services: Evidence from home-based skilled birth attendant programmes in Bangladesh. *Bulletin of the World Health Organization* 86:252–259.
- Arpadi, SM. 2000. Growth failure in children with HIV infection. *Journal of Acquired Immune Deficiency Syndromes* 25:S37–S42.
- Babbie, E & Mouton, J. 2011. *The practice of social research*. South African edition. Cape Town: Oxford University Press Southern Africa.
- Beck, D, Ganges, F, Goldman, F & Long, P. 2004. *Care of the newborn: Reference manual*. Washington, DC: Save the Children Federation.
- Booyens, SW. 2008. *Introduction to health services management*. Cape Town: Juta.
- Borghi, J, Ensor T, Neupane, BD & Tiwani, S. 2006. Financial implication of skilled attendance at delivery in Nepal. *Tropical Medicine and International Health* 11(2):228–237.
- Brink, HI, Van der Walt, C & Van Rensburg, G. 2006. *Fundamentals of research methodology for health care professionals*. 2<sup>nd</sup> edition. Cape Town: Juta.
- Burns, N & Grove, S. 2005. *The practice of nursing research: Conduct critique and utilization*. 2<sup>nd</sup> edition. Cape Town: Juta.
- Chirenje, ZM. 2005. HIV and cancer of the cervix. *Best Practice & Research Clinical Obstetrics and Gynaecology* 19(2):269–276.

Chouraya, C. 2010. Basic facts on HIV and AIDS. Paper presented at the Elizabeth Glaser Paediatric AIDS Foundation, 7–11 March, Mbabane.

Chouraya, C. 2011. Advanced integrated management of adult illnesses: Prevention of mother to child transmission and antiretroviral therapy in pregnancy. Paper presented at the Elizabeth Glaser Paediatric AIDS Foundation, 2–6 May, Mbabane.

Cloke, BS & Andrew, WJ. 2010. Obstetrics – postnatal. *Current Medical Literature: Gynaecology & Obstetrics* 15(1):20–22. *Journal of Acquired Immune Deficiency Syndromes* 55(3):287–289

Cohen, MH, Olszewski, Y, Webber, MP, Blaney, N, Garcia, P, Maupin, R, Nesheim, S, Agniel, D, Danner, SP, Lampe, MA & Bulterys, M. 2007. Women identified with HIV at labour and delivery: Testing, disclosing and linking to care challenges. *Maternal and Child Health Journal* 12(5):568–576.

Conner-Spady, BL, Sanmugasunderam, S, Courtright, P, McGurran, JJ & Noseworthy, TW. 2004. *Br J Ophthalmol* 88:1305–1309.

Coughlin, SS, Beauchamp, TL & Weed, DL. 2009. *Ethics and epidemiology*. 2<sup>nd</sup> edition. New York: Oxford University Press.

Coutsoudis, A, Bobat, RA, Coovadia, HM, Kuhn, L, Tsai, W & Stein, ZA. The effects of vitamin A supplementation on the morbidity of children born to HIV-infected women. *American Journal of Public Health* 85(8):1076–1081.

Creel, LC, Sass, JV & Yinger, NV. 2002. *Overview of quality care in reproductive health: Definitions and measurements of quality*. Washington, DC: Population Reference Bureau.

Creswell, JW. 2009. *Research designs: Qualitative, quantitative and mixed methods approach*. London: Sage.

Crossman, A. 2012. *An overview of quantitative research methods*. From: [www.marketresearch.about.com/od/market-research-quantitative/a/Quantitative-Research-Advantages-And-Disadvantages.htm](http://www.marketresearch.about.com/od/market-research-quantitative/a/Quantitative-Research-Advantages-And-Disadvantages.htm) (accessed 23/11/2011).

Dabis, F & Leroy V. 2000. Preventing mother-to-child transmission of HIV: Practical strategies for developing countries. *The AIDS Reader* 10(4): 241–244.

Demott, K, Bick D, Norman, R, Ritchie, G, Turnbull, N, Adams, C, Barry, C, Byrom, S, Elliman, D, Marchant, S, Mccandlish, R, Mellows, H, Neale, C, Parker, M, Tait, P & Taylor, C. 2006. *Clinical guidelines and evidence review for postnatal care: Routine postnatal care of recently delivered women and their babies*. London: National Collaborating Centre for Primary Care and Royal College of General Practitioners.

Dhaheer, E, Mikolajczyk, RT, Maxwell, AE & Kramer, A. 2008. Factors associated with lack of postnatal care among Palestinian women: A cross-sectional study of three clinics in the West Bank. *BMC Pregnancy and Childbirth* 8(26):1–9.

Dogba, M & Fournier, P. 2009. Human resource and the quality of emergency obstetric care in developing countries: A systematic review of literature. *PubMed Central* 7(10):1478–1491. From: [www.ncbi.nlm.nih.gov/pmc/articles/PMC2645357/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2645357/) (accessed 21 October 2011).

EGPAF (Elizabeth Glaser Paediatric AIDS Foundation). 2010. *Call to action: End of project report 2002–2009*. Washington, DC.

EGPAF (Elizabeth Glaser Paediatric AIDS Foundation). 2011. *The global AIDS pandemic: Key facts*. Washington, DC: EGPAF.

Fraser, DM & Cooper, MA. 2009. *Myles textbook for midwives*. New York: Church Livingstone.

Fraser, DM & Cooper, MA. 2003. *Myles textbook for midwives*. New York: Church Livingstone.

Gillis, A & Jackson, W. 2002. *Research for nurses: Methods and interpretation*. Philadelphia, PA: FA Davis.

Glans, K, Rimer, BK & Lewis, MF. 2002. *Health behaviour and health education: Theory, research and practice*. San Francisco, CA: Wiley.

Harrison, V. 2010. *The newborn baby*. 5<sup>th</sup> edition. Cape Town: Juta.

Horwood, C, Haskins, L, Vermaak, K, Phakathi, S, Subbaye, R & Doherty, T. 2010. Prevention of mother to child transmission of HIV (PMTCT) programme in KwaZulu-Natal, South Africa: An evaluation of PMTCT implementation and integration into

routine maternal, child and women's health services. *Tropical Medicine and International Health* 15(9):992–999.

Hulley, SB, Cummings, SR, Browner, WS, Grady, DG & Newman, TB. 2007. *Designing clinical research*. 3<sup>rd</sup> edition. Philadelphia, PA: Lippincott Williams & Wilkins.

Humphrey, JH, Marinda, E, Mutasa, K, Moulton, LH, Iliff, PJ, Ntozini, R, Chidawanyika, H, Nathoo, KJ, Tavengwa, N, Jenkins, A, Piwoz, EG, Van de Perre, P & Ward, BJ. 2010. Mother to child transmission of HIV among Zimbabwean women who seroconverted postnatally: Prospective cohort study. *British Medical Journal* 341:65–80.

ICM (International Confederation of Midwives). 1992. *International definition of the midwife*. The Hague.

ICM (International Confederation of Midwives). 2002. *Essential competencies for basic midwifery practice*. The Hague.

ICM (International Confederation of Midwives). 2011. *Essential competencies for basic midwifery practice 2010*. The Hague

Jacobson, NM. 2011. *Postnatal care*. From: [www.healthline.com/galecontent/postpartum](http://www.healthline.com/galecontent/postpartum) (accessed 19 August 2011).

Jaspan, HB & Garry, R. 2003. Preventing neonatal HIV: A review. *Current HIV Research* 1(3):321–327.

Johnson, R & Taylor, W. 2005. *Skills for midwifery practice*. 2<sup>nd</sup> edition. New York: Elsevier Church Livingstone.

Joubert, G & Ehrlich, R. 2010. *Epidemiology: A research manual for South Africa*. 2<sup>nd</sup> edition. Cape Town: Oxford University Press Southern Africa.

Judith, B. 1990. Fundamental elements of the quality of care: A simple framework. *Studies in Family Planning* 21(2):61–69.

Kak, L, Chitsike, I, Luo, C & Rollins, N. 2006. Prevention of mother to child transmission of HIV/AIDS programmes. From:



[www.who.int/pmnch/media/publications/aonsectionIII\\_7.pdf](http://www.who.int/pmnch/media/publications/aonsectionIII_7.pdf) (accessed 10 May 2012).

Kebaabetswe, PM. 2007. Barriers to participation in the prevention of mother to child HIV. *AIDS Care* 19(3):355–360.

KoS, CSO (Kingdom of Swaziland, Central Statistical Office). 2008. *Swaziland 2007 demographic and health survey*. Mbabane: Central Statistics Office.

KoS, MoH, HMIS (Kingdom of Swaziland, Ministry of Health, Department of Health Management Information System) .2009. *Prevention of Mother to Child Transmission of HIV report*. Mbabane: HMIS.

KoS, MEPD (Kingdom of Swaziland, Ministry of Economic Planning and Development). 2010. *Swaziland Millennium Development Goals progress report*. Mbabane: Printpak.

KoS, MHSW (Kingdom of Swaziland, Ministry of Health and Social Welfare). 2006. *National health and social welfare policy*. Mbabane: Printpak.

KoS, MHSW (Kingdom of Swaziland, Ministry of Health and Social Welfare). 2008. *Repositioning postnatal care*. Mbabane: Printpak.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2009. *Annual PMCT report*. Mbabane: Webster Print.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2010a. *National prevention of mother to child transmission of HIV guidelines*. 3<sup>rd</sup> edition. Mbabane: Printpak.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2010b. *Paediatric HIV management guidelines*. Mbabane: Printpak.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2010c. *Service availability mapping report*. Mbabane: Webster Print.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2010d. *Swaziland national HIV testing and counselling guidelines*. Mbabane: Webster Print.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2010e. *11<sup>th</sup> national HIV serosurveillance among women attending antenatal care services*. Mbabane: Print Design.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2010f. *National comprehensive HIV package of care for adults and adolescents in Swaziland*. Mbabane: Printpak.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2010g. *12<sup>th</sup> national HIV serosurveillance among women attending antenatal care services in Swaziland*. Mbabane: Webster Print.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2011a. *Confidential enquiry into maternal deaths: Triennial report 2008–2010*. Mbabane: Webster Print.

KoS, MoH (Kingdom of Swaziland, Ministry of Health Management Information System). 2011b. *PMCT data quarterly review report*. Mbabane: Strategic Information Department

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2011c. *Improving the competency based midwifery training in Swaziland*. Mbabane: Printpak.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2011d. *National comprehensive HIV package of care: For adults and adolescent in Swaziland*. Mbabane: Webster Print.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2011e. *PMCT data quarterly review report*. Mbabane: Strategic Information Department.

KoS, MoH (Kingdom of Swaziland, Ministry of Health). 2012. *National policy on sexual and reproductive health*. Draft three. Mbabane: Government Printer.

KoS, NERCHA (Kingdom of Swaziland, National Emergency Response Council on HIV and AIDS). 2009a. *Swaziland HIV prevalence response and modes of transmission analysis*. Mbabane: Printpak.

KoS, NERCHA (Kingdom of Swaziland, National Emergency Response Council on HIV and AIDS). 2009b. *Swaziland HIV prevention response and modes of transmission analysis*. Mbabane: Printpak

KoS, NERCHA (Kingdom of Swaziland, National Emergency Response Council on HIV and AIDS). 2012. *Swaziland country report on monitoring the political declaration on HIV and AIDS*. Mbabane: Printpak.

Kwashie, K. 2012. PMTCT data quarterly review. Paper presented at the Elizabeth Glaser Paediatric AIDS Foundation, 4 May, Mbabane.

Leedy, PD & Ormrod, JE. 2010. *Practical research: Planning and design*. 9th edition. New Jersey: Merrill Prentice Hall.

Leifer, G. 2007. *Introduction to maternity & paediatric nursing*. 5<sup>th</sup> edition. Philadelphia, PA: Saunders Elsevier.

Leifer, G. 2008. *Maternity nursing: An introductory text*. 10<sup>th</sup> edition. Philadelphia: Saunders Elsevier.

Lemly, D, Mandelbrot, L, Meier, F, Firtion, G, Matheron, S, Jeantils, V & Scott, TA. 2007. Factors related to medical appointment attendance after childbirth among HIV-infected women in the Paris region. *AIDS Care* 19(3):346–354.

Lewis, P & Smith, R. 1996. The management of HIV-positive pregnant women. *Modern Midwife* 6(4):26–28.

London, ML, Ladewig, PW, Ball, JW & Bindler, RC. 2007. *Maternal and child nursing care*. 2<sup>nd</sup> edition. Philadelphia, PA: Pearson Prentice Hall.

Lowdermilk, DL & Perry, SE. 2006. *Maternity nursing*. 7<sup>th</sup> edition. Philadelphia, PA: Mosby Elsevier.

Madec, Y, Szumilin, E, Genevierb, C, Ferradinib, L, Balkan, S, Pujadese, M & Fontanet, A. 2009. Weight gain at 3 months of antiretroviral therapy is strongly associated with survival: Evidence from two developing countries. *AIDS* 23(7):853–861.

Madisha, MCJ. 2008. Factors altering HIV and AIDS postnatal clients' commitment to exclusive breastfeeding. MA thesis. University of South Africa. Pretoria.

Makumbe, S. 2001. Utilization of postnatal services at St. Joseph's clinic at Chishawasha (Zimbabwe). MA thesis. University of South Africa. Pretoria.

- Manzi, M, Zachariah, R, Teck, R, Buhendwa, L, Kazima, J, Bakali, E, Firmenich, P & Humblet, P. 2005. High acceptability of voluntary counselling and HIV-testing but unacceptable loss to follow up in a prevention of mother-to-child HIV transmission programme in rural Malawi: Scaling-up requires a different way of acting. *Tropical Medicine & International Health* 10(12):1242–1250.
- Marazzi, MC, Nielsen-Saines, K, Buonomo, E, Scarcella, P, Germano, P, Majid, NA, Zimba, I, Ceffa, S & Palombi, L. 2009. Increased infant human immunodeficiency virus-type one free survival at one year of age in sub-Saharan Africa with maternal use of highly active antiretroviral therapy during breast-feeding. *The Paediatric Infectious Disease Journal* 28(6):483–487.
- Mazia, G, Narayan, I, Warren, C, Mahdi, M, Chibuye, P, Walligo, A, Mabuza, P, Shongwe, R & Hainsworth, M. 2009. Repositioning postnatal care in a high HIV environment: Swaziland. *Global Public Health* 4(3):253–270.
- Mazumdar, MD. 2011. *Normal postpartum*. From: [www.gynaeonline.com/norm-post](http://www.gynaeonline.com/norm-post) (accessed 22 August 2011).
- Mellish, JM & Paton, F. 2000. *An introduction to the ethos of nursing: A text for basic student nurses*. Johannesburg: Heinemann Higher & Further Education.
- Mirkuzie, AH, Hinderaker, SG & Mørkve, O. 2010. Promising outcomes of a national programme for the prevention of mother-to-child HIV transmission in Addis Ababa: A retrospective study. *BMC Health Services Research* 10:2–67.
- Mnyani, CN & McIntyre, JA. 2009. Preventing mother-to-child transmission of HIV. *International Journal of Obstetrics and Gynaecology* 116(1):71–76.
- Morestin, F, Bicaba, A, Serme, JD & Fournier, P. 2009. Framework for the quality of obstetric care. From: [www.biomedcentral.com/content/.../1472-6963-10-20-S1.DOC](http://www.biomedcentral.com/content/.../1472-6963-10-20-S1.DOC) (accessed 10 August 2011).
- Muller, M, Bezuidenhout, M & Jooste, K. 2006. *Health care service management*. Cape Town: Juta.
- Murray, SS & McKinney, ES. 2006. *Foundations of maternal-newborn nursing*. 4<sup>th</sup> edition. Philadelphia, PA: Saunders Elsevier.

Nancy, RC, Evans, D & Terlonge, D. 2010. *Path physiology of the human immunodeficiency virus*. Mbabane: BAPAI.

NERCHA and HEARD (National Emergency Response Council on HIV and AIDS and Health Economics & HIV/AIDS Research Division). 2006. *The socio-economic impact of HIV/AIDS in Swaziland*. Mbabane: Webster Print.

Nguyen, TA, Oosterhoff, P, Ngoc, YP, Wright, P & Hardon, A. 2009. Self-help groups can improve utilization of post-natal care by HIV-positive mothers. *Journal of the Association of Nurses in AIDS Care* 20(2):119–140.

Noel, F, Mehta, S, Zhu Y, Rouzier PM, Marcelin, A, Shi, JR, Nolte C, Severe, L, Deschamps, MM, Fitzgerald, DW, Johnson, WD, Wright, PF & Pape, JW. 2008. Improving outcomes in infants of HIV-infected women in a developing country setting. *Plos One* 3(11):3723-3723.

Nxumalo SJ. 2011. Factors that affect theory-practice integration of student nurses at a selected campus of a nursing college in the Limpopo province. MA thesis. University of South Africa. Pretoria.

Obiri, GU, Thomas, PA & Caldwell, B. 1996. Trends in age at the first medical evaluation of human immunodeficiency virus infection among infants born to infected mothers. *Archives of Paediatrics & Adolescent Medicine* 150(8):787–789.

Olsen, OE, Ndeki, S & Norheim, OF. 2005. Human resource for emergency obstetric care in northern Tanzania: Distribution of quantity or quality? *PubMed Central* 3(10):1186/1478-4491-3-5.

From: [www.ncbi.nlm.nih.gov/pmc/articles/PMC1199615/?tools=pubmed](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1199615/?tools=pubmed) (accessed 23 October 2011).

O'Neil, R. 2006. *Learning to analyse quantitative data*. From: [www.learninghigher.ac.uk/analysethis/main/quantitative](http://www.learninghigher.ac.uk/analysethis/main/quantitative) (accessed 27 August 2011).

Owino, B. 2004. The use of maternal health care services; socio-economic and demographic factors. *IFRA- Les Cahiers* 21:81-122

Parikh, SA. 2007. The political economy of marriage and HIV: The ABC approach, "Safe" infidelity and management moral risk in Uganda. *American Journal of Public Health* 97(7):1198–1208.

Phaswana, M & NancyKayongo, D. 2008. Experiences of prevention of mother to child transmission services by HIV+ mothers in the Eastern Cape of South Africa: HIV/Aids and health. *African Journal for Physical Health Education, Recreation and Dance* 14(1):63–87.

Polit, DF & Beck, CT. 2004. *Nursing research principles and methods*. New York: Lippincott Williams & Wilkins.

Polit, DF & Beck, CT. 2008. *Nursing research: Generating and assessing evidence for nursing practice*. 8<sup>th</sup> edition. New York: Lippincott Williams & Wilkins.

Porcher, FK. 1992. HIV-infected pregnant women and their infants: Primary health care implications. *The Nurse Practitioner* 17(11):49–54.

Potter, PA & Perry, AG. 2009. *Fundamentals of nursing*. 7<sup>th</sup> edition. New York: Mosby Elsevier.

RCM (Royal College of Midwives). 2011. *Evidence based midwifery*. 9(4):137–142.

RoB, MoH (Republic of Botswana, Ministry of Health). 2008. *Policy guidance to male involvement in sexual reproductive health, HIV/AIDS and gender based violence prevention and management: An addendum to the sexual reproductive health policy guideline and service standard*. Gaborone.

Roets, L, Martheze, B, Nel, M, Van der Vyver, M & Wilke, M. 2003. The prevention of intrapartum HIV/AIDS transmission from mother to child. *Curationis* 26(3):12–20.

Rollins, N & Meda, N. 2004. Preventing postnatal transmission of HIV-1 through breast-feeding: Modifying infant feeding practices. *Journal of Acquired Immune Deficiency Syndromes* 35(2):188–195.

Rotheram-Borus, MJ, Richter, L, Van Rooyen, H, Van Heerden, A, Tomlinson, M, Stein, A, RoCHAT, T, De Kadt, J, Mtungwa, N, Mkhize, L, Ndlovu, L, Ntombela, L, Comulada, WS, Desmond, KA & Greco, E. 2011. Project Masihambisane: A cluster

randomised controlled trial with peer mentors to improve outcomes for pregnant mothers living with HIV. *Trials* 12(2): 1-10.

RSA, DoH (Republic of South Africa, Department of Health). 2010. *Clinical guidelines: Prevention of mother to child transmission*. Pretoria: South African AIDS Council.

Sanders, LB. 2008. Women's voices: The lived experience of pregnancy and motherhood after diagnosis with HIV. *Journal of the Association of Nurses in AIDS Care* 19(1):47–57.

Shah, I & Say, L. 2006. *Maternal mortality care from 1990 to 2005: Uneven but important gains*. From: [www.thefreelibrary.com/maternalmortality](http://www.thefreelibrary.com/maternalmortality) (accessed 19 August 2011).

Shongwe, LS. 2009. The extent of postnatal care delivery at Mbabane Public Health Unit. Bachelor of Nursing Science dissertation. University of Swaziland. Mbabane.

Shongwe, R & Warren, C. 2010. *Practices and experiences of postnatal women in Swaziland*. Mbabane: Webster Print.

Sines, E, Syed, U, Walls, S & Worley, H. 2007. *An opportunity to save mothers and children*. From [www.prb.org/pdf07/snl\\_pncbrieffinal.pdf](http://www.prb.org/pdf07/snl_pncbrieffinal.pdf) (accessed 12 December 2011).

Temmerman, M & Moses, S. 1990. Impact of single session post-partum counselling of HIV infected women on their reproductive behaviour. *AIDS Care* 2(3):247-252.

Thior, I, Gabaitiri, L, Grimes, J, Shapiro, R, Lockman, S, Kim, S, Kebaabetswe, P, Garmey, E, Montano, M, Peter, T, Chang, S, Marlink, R & Essex, M. 2007. Voluntary counselling and testing among post-partum women in Botswana. *Patient Education & Counselling* 65(3):296–302.

Titaley, CR, Hunter, CL, Heywood, P & Dibley, MJ. 2010. Why don't some women attend antenatal and postnatal care services? a qualitative study of community members' perspectives in Garut, Sukabumi and Ciamis districts of West Java Province, Indonesia. *BioMed Central Pregnancy and Childbirth* 10(61):1–12. From: [www.biomedcentral.com/1471-2393/10/61](http://www.biomedcentral.com/1471-2393/10/61) (accessed 25 May 2012).

Tlebere, P, Jackson, D, Loveday, M, Matizirofa, L, Mbombo, N, Doherty, T, Wigton, A, Treger, L & Chopra, M. 2007. Community-based situation analysis of maternal and neonatal care in South Africa to explore factors that impact utilization of maternal health services. *Journal of Midwifery & Women's Health* 52(4):342–350.

UNAIDS (United Nations Program on HIV/AIDS). 2009. *The joint action for results: UNAIDS outcome framework, 2009–2011*. Geneva.

UNAIDS (United Nations Program on HIV/AIDS). 2010. *Global report: UNAIDS report on the global epidemic*. Geneva.

UNFPA (United Nations Population Fund). 2009. *Trends in maternal mortality: 1990 to 2008*. Geneva: WHO.

UNFPA (United Nations Population Fund). 2010. *State of midwifery around the world*. Geneva.

UNFPA (United Nations Population Fund). 2011. *Maternal mortality*. Geneva.

UNICEF (United Nations Children's Fund). 2007. *Vitamin A supplementation: A decade of progress*. New York.

UNICEF and WHO (United Nations Children's Fund and World Health Organization). 2009. *Cotrimoxazole for HIV exposed and HIV infected infants and children: Practical approaches implementation to scale up*. Geneva: WHO.

UNISA (University of South Africa). 2007. *Policy on research ethics*. Pretoria.

Waltson, N. 2005. *Challenges and opportunities for male involvement in reproductive health in Cambodia: Policy project*. From: [www.policyproject.com/pubs/countryreports/MaleInvolv\\_Cam.pdf](http://www.policyproject.com/pubs/countryreports/MaleInvolv_Cam.pdf) (accessed 10 May 2012).

Warren, C, Daly, P, Toure, L & Mongi, P. 2006. *Postnatal care*. From: [www.who.int/pmnch/media/publications/aonsectionIII\\_4.pdf](http://www.who.int/pmnch/media/publications/aonsectionIII_4.pdf) (accessed 29 February 2012).



Warren, C, Mwangi, A, Oweya, E, Kamunya, R & Koskei, N. 2009. Safeguarding maternal and newborn health: Improving the quality of postnatal care in Kenya. *International Journal for Quality in Health Care* 22(1):24–30.

Warren, C, Shongwe, R, Waligo, A, Mahdi, M, Mazia, G & Narayanam, I. 2008. *Repositioning postnatal care in a high HIV environment: Swaziland*. Washington, DC: Population Council.

WHO (World Health Organization). 2001. *Breastfeeding and replacement feeding practices in the context of mother to child transmission of HIV: An assessment tool for research*. Geneva.

WHO (World Health Organization). 2002a. *Essential antenatal, perinatal and postpartum care: Training modules*. Geneva.

WHO (World Health Organization). 2002b. *The optimal duration of exclusive breastfeeding: A systematic review*. Geneva.

WHO (World Health Organization). 2004. *3 by 5 update report for Swaziland*. Mbabane: Printpak.

WHO (World Health Organization). 2005. *Make every mother and child count: World Health Report*. Geneva.

WHO (World Health Organization). 2006. *Guidelines on co-trimoxazole prophylaxis for HIV-related infections among children, adolescent and adults: Recommendations for a public approach*. Geneva.

WHO (World Health Organization). 2007. *Post-exposure prophylaxis to prevent HIV infection: Joint WHO / International Labour Organization on post-exposure prophylaxis to prevent HIV infection*. Geneva.

WHO (World Health Organization). 2008a. *HIV transmission through breastfeeding: A review of available evidence, 2007 update*. Geneva.

WHO (World Health Organization). 2008b. *Report of the technical support mission for the feasibility assessment and financial project results for a social health insurance scheme in Swaziland: Exploring possible options*. From:

[www.who.int/entity/health\\_financing/documents/SWZ\\_SHI.pdf](http://www.who.int/entity/health_financing/documents/SWZ_SHI.pdf) (accessed 28 May 2012).

WHO (World Health Organization). 2009a. *Newborns: Reducing mortality*. From: [www.who.int/mediacentre/factsheets/fs333/en/](http://www.who.int/mediacentre/factsheets/fs333/en/) (accessed 13 April 2012).

WHO (World Health Organization). 2009b. *Regional committee for Africa*. Kigali.

WHO (World Health Organization). 2009c. *Revised prevention of mother to child transmission of HIV WHO recommendations 2009*. Geneva.

WHO (World Health Organization). 2009d. *Use of antiretroviral drugs for treating pregnant women and preventing HIV infections in infants: Revised 2009 guidelines*. Geneva.

WHO (World Health Organization). 2010a. *Antiretroviral drugs for treating pregnant women and preventing HIV infections in infants: Recommendations for a public health approach 2010 version*. Geneva.

WHO (World Health Organization). 2010b. *Maternal mortality*. From: [www.who.int/factsheet](http://www.who.int/factsheet) (accessed 30 August 2011).

WHO (World Health Organization). 2011a. Exclusive breastfeeding for six months best for babies everywhere: Statement. From: [www.who.int/mediacentre/news/statements/2011/breastfeeding](http://www.who.int/mediacentre/news/statements/2011/breastfeeding) (accessed 15 May 2012).

WHO (World Health Organization). 2011b. *Immunization profile – Swaziland*. From: [www.who.int/immunization\\_monitoring/en/globalsummary/countryprofileresult](http://www.who.int/immunization_monitoring/en/globalsummary/countryprofileresult) (accessed 1 September 2011).

WHO (World Health Organization). 2012. *Swaziland reported immunization coverage*. From: [www.apps.who.int/immunization.../en/.../tscoveragebycountry.cfm?C](http://www.apps.who.int/immunization.../en/.../tscoveragebycountry.cfm?C) (accessed 10 May 2012).

WHO and CDC (World Health Organization and Centers for Disease Control and Prevention). 2004. *Prevention of mother to child transmission of HIV: Generic training package – trainer manual*. Geneva: WHO.

WHO and UNICEF (World Health Organization and United Nations Children's Fund). 2005. *GIVS Global immunization vision and strategy 2006– 2015*. Geneva: WHO.

WHO, MPS (World Health Organization, Department of Making Pregnancy Safer). 2007. *Integrated management of pregnancy and childbirth: WHO recommended interventions for improving maternal health*. Geneva.

WHO, MPS (World Health Organization, Department of Making Pregnancy Safer). 2010b. *WHO consultation on postpartum and postnatal care*. Geneva.

WHO, UNAIDS, UNFPA and UNICEF (World Health Organization, United Nations Program on HIV/AIDS, United Nations Population Fund and United Nations Children's Fund). 2010. *Guidelines on HIV and infant feeding 2010: Principles and recommendations for infant feeding in the context of HIV and a summary of evidence*. Geneva: WHO.

WHO, UNICEF, UNFPA and the WB (World Health Organization, United Nations Children's Fund, United Nations Population Fund and the World Bank). 2005. *Maternal mortality in 2005: Estimates developed by WHO, UNICEF, UNFPA and the World Bank*. Geneva: WHO.

Wilcox, AJ. 2001. On the importance – and the unimportance – of birth weight. *International Journal of Epidemiology* 30:1233–1241.

Will, GH. 2008. *Research resources*. From: [www.sportsci.org](http://www.sportsci.org) (accessed 27 July 2011).

William, MK. 2011. *What is purposive sampling?* From: [www.blurti.com/q302489](http://www.blurti.com/q302489) (accessed 25 August 2011).

Xue, J, Mhango, Z, Hoffman, IF, Mofolo, I, Kamanga, E, Campbell, J, Allgood, G, Cohen, MS, Martinson, FE, Miller, WC & Hosseinipour, MC. 2010. Use of nutritional and water hygiene packages for diarrhoeal prevention among HIV-exposed infants in Lilongwe, Malawi: An evaluation of a pilot prevention of mother-to-child transmission post-natal care service. *Tropical Medicine & International Health* 15(10):1156–1162.

Youngleson, MS, Nkurunziza, P, Jennings, K, Arendse, J, Mate, KS & Barker, P. 2010. Improving a mother to child HIV transmission programme through health

system redesign: Quality improvement, protocol adjustment and resource addition. *Plos One* 5(11):13891-13891.

Ziyane, IS & Ehlers, VJ. 2006. Swazi youths' attitude and perceptions concerning adolescent pregnancies and contraception. *Health SA Gesondheid* 11(1):31–42.

Ziyane, IS & Thwala, M. 2010. Low uptake of postnatal care in Swaziland. *African Journal of Midwifery and Women's Health* 4(1):15–21.

Zolfo, M, De Weggheleire, A, Schouten, E & Lynen, L. 2010. Time for “test and treat” in prevention of mother-to-child transmission programs in low- and middle-income countries. *Journal of Acquired Immune Deficiency Syndromes* 55(3):287–289.

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10 June 2012


Document no. 02 Dlamini

TO: The Head of Department  
University of South Africa  
P.O. Box 392  
UNISA  
0003

**Dissertation editing confirmation**

This letter serves to confirm that language editing of the dissertation for Mr Bongani Robert Dlamini, student number: 43428967, dissertation title: evaluation of postnatal care rendered to HIV positive women and their infants, was done by me.

Many thanks.



JACKIE VILJOEN  
Language Editor and Translator

3 May 2012

The Head of Department  
University of South Africa  
P.O.Box 392  
UNISA  
0003

Dear Head of Department

**Re: Confirmation of Data Analysis for Mr Bongani Dlamini (43428967).**

I am a professional statistician, and have been involved in a number of studies at national level, where I analysed data; these include but not limited to the following, online published studies:

- Making medical male circumcision work for women: Swaziland country report, December 2010
- Improved detection of incident HIV infection and uptake of PMTCT service in labour and delivery in high HIV prevalence setting.

This letter serves to confirm that data entering, analysis and interpretation of results, specifically statistical tests: for Mr Bongani Robert Dlamini, student number: 43428967, dissertation title: evaluation of postnatal care rendered to HIV positive women and their infants, were done by me.

My current highest qualification I hold, is a Master's degree in Public Health.



Yours faithfully

**Kwashie Kudiabor, MPH | Associate Director for Strategic Information and Evaluation**

**Elizabeth Glaser Paediatric AIDS Foundation (EGPAF) | Swaziland Office**

MTN Office, Park Karl Grant St | Mbabane, Swaziland |

Phone: +268 2 404 8081 | Fax: +268 2 409 0026 | Cell: +268 7636 9599 |

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**UNIVERSITY OF SOUTH AFRICA  
Health Studies Higher Degrees Committee  
(HSHDC)  
College of Human Sciences  
ETHICAL CLEARANCE CERTIFICATE**

Date of meeting: 13 October 2011

Project No: 4342-896-7

Project Title: An evaluation of postnatal care rendered to HIV positive women and their infants.

Researcher: Bongani Robert Dlamini

Degree: MA (Health Studies)

Code: MPCHS94

Supervisor: Dr IS Ziyane

Qualification: D Litt et Phil

Joint Supervisor: -

**DECISION OF COMMITTEE**

Approved



Conditionally Approved



  
Prof E Potgieter

**CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE**

  
Prof MC Bezuidenhout

**ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES**

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES



P. O. Box 7946  
Mbabane

4<sup>th</sup> September 2011

The Scientific and Ethical Committee  
Ministry of Health  
P. O. Box 5  
**MBABANE**

Dear Sir/Madam

**RE: Request to conduct a study to HIVpositive mothers and their infants is selected health facilities.**

I am a first year Masters Degree student at the University of South Africa. In partial fulfilment of the requirements of the programme, I am required to conduct a research project. My research topic is "An evaluation of postnatal care rendered to HIV positive mothers and their infants". The study sites are Siteki Public Health Unit (PHU), Dvokolwako PHU, Mbabane PHU, Raleigh Fitkin Memorial Hospital (Maternal- Child health Department), Good Shepherd PHU, King Sobhuza II PHU, Hlatikulu PHU, Pigg's Peak PHU and Nhlangano PHU. I therefore request for permission to conduct the research study.

I intend to conduct a face to face interview following a questionnaire. May I assure you that the researcher will adhere to ethical principles when administering the study.

Your consideration of my request will be greatly appreciated.

Yours Faithfully

  
Bongani Robert Dlamini



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Telephone: (+268 404 2431)  
Fax: (+268 404 2092)



MINISTRY OF HEALTH  
P.O. BOX 5  
MBABANE  
SWAZILAND

**THE KINGDOM OF SWAZILAND**

**FROM:** The Chairman  
Scientific and Ethics Committee  
P. O. Box 5  
Mbabane

**TO:** Mr. Bongani Dlamini  
Principal Investigator  
P.O Box  
Mbabane

**DATE:** 11<sup>th</sup> October 2011

**REF:** MH/599C

**RE: An Evaluation of PastNatal Care Rendered to HIV Positive Mothers and Their infants**

The committee thanks you for addressing the issues raised by the committee and the clarity on responses to the protocol amendment.

In view of the responses submitted after concerns raised and the fact that the study is in accordance with ethical and scientific standards, the committee therefore grants you authority to conduct the study. You are requested to adhere to the specific topic and inform the committee through the chairperson of any changes that might occur in the duration of the study which are not in this present arrangement.

The committee wishes you the best and is eagerly awaiting findings of the study to inform proper planning and programming.

Yours Sincerely,

**Dr. S. V. Magagula**  
Chairperson Scientific and Ethics Committee  
cc: Sec Members



**Telegrams:**

**Telex:**

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**Fax:** (+268 404 2092)



THE NATIONAL PUBLIC  
HEALTH MATRON  
P.O. BOX 1119  
MBABANE  
SWAZILAND

## THE KINGDOM OF SWAZILAND

---

22nd November 2011

Mr. Bongani Robert Dlamini  
P.O.Box 7946  
Mbabane

**RE: Your request to conduct a study to HIV Positive mothers and their infants in selected health facilities in Swaziland**

Thank you for requesting to conduct the above study in the selected health facilities in the country which are as follows: Siteki PHU, Dvokolwako PHU, Mbabane PHU, RFM Hospital (maternal and child health department), Good Shepherd Hospital (PHU) KS11 PHU, Piggs Peak PHU and Nhlangano PHU.

Permission is hereby being granted to you to conduct the study as the Scientific and Ethics Committee in the Ministry of Health has granted you permission.

The office wishes you the best as you undertake the study, and hopes to get a report on the findings.

Yours Sincerely

BONAKELE HLATSHWAYO  
(National Public Health Matron)



## **QUESTIONNAIRE**

---

**INSTRUCTION:** For each response tick for applicable/done in the respective box.

### **Section A**

#### ***Biographic information***

I am going to ask some information about yourself.

1. How old are you (in years)?
2. What is your present marital status?
  - a) Married ☐
  - b) Never married ☐
  - c) Separated ☐
  - d) Divorced ☐
  - e) Widow ☐
  - f) Cohabiting ☐
3. How many children do you have?
  - a. Living
  - b. Deceased
4. What is the highest level of education you attained?
  - a) No formal education ☐
  - b) Primary ☐
  - c) Secondary ☐
  - d) High school ☐
  - e) Tertiary ☐
5. What is your occupation?
  - a) Skilled ☐
  - b) Semi-skilled ☐

- c) Professional ☐
- d) Not working ☐

6. What is your residential area?

- a) Urban ☐
- b) Rural ☐
- c) Peri-urban ☐

7. Where did you deliver your baby?

- a) Hospital ☐
- b) Clinic ☐
- c) Home ☐
- d) Other specify.....

8. Who conducted your delivery?

- a) Midwife ☐
- b) Doctor ☐
- c) Traditional birth attendant ☐
- d) Other specify.....

## **Section B**

### ***Process***

*Care provided to an HIV infected mother after delivery*

9. Are you already on HAART?

- a) Yes
- b) No

10. What postnatal care services were provided to you immediately after delivery?

- a) Physical examination ☐
- b) BP check ☐
- c) Pulse count ☐
- d) Temperature check ☐
- e) Antiretroviral drugs ☐
- f) Vitamin A ☐
- g) Other specify.....

11. What information were you given after delivery?

- a) Proper hygiene by use of saline sitz baths ☐
- b) Adherence to antiretroviral drugs ☐
- c) Exclusive breastfeeding ☐
- d) Exclusive replacement feeding ☐
- e) Other specify.....

*Care of mother just before discharge*

12. What postnatal care services were rendered to you before discharge?

- a) Physical examination ☐
- b) BP check ☐
- c) Pulse count ☐
- d) Temperature check ☐
- e) Family planning counselling ☐
- f) Other specify.....

13. What information were you given at discharge?

- a) Identification of danger signs to yourself ☐
- b) Immunization Schedule ☐
- c) CTX prophylaxis counselling ☐
- d) NVP syrup schedules and dosing ☐

- e) Postnatal care visit at 7- 14days ☐
- f) PNC at 6 weeks ☐
- g) Safe infant feeding ☐
- h) Importance of your nutrition ☐

14. What drugs/equipments were you given on discharge?

- a) Infant NVP prophylaxis (25 ml bottles of NVP) ☐
- b) A 5 ml syringe ☐
- c) A clip ☐

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly agree</b>
15. Was it demonstrated to you how to use the supplies?					
16. Were you allowed to practice its use before discharge?					
17. Were you ensured of support from mentor mother or expert client during postnatal period?					
18. Was the importance of returning to the clinic within 7 days to 14 days reinforced?					
19. Was the importance of returning at 6 weeks reinforced for Cotrimoxazole, DBS and NVP days reinforced?					

Postnatal visit within 3 days to 14 days after delivery

20. Did you attend PNC within this period (3-14 days)?

- a) Yes
- b) No

21. What postnatal care services were provided to you within 3 days to 14 days at PNC visit?

- a) Take history of pregnancy. ☐
- b) Asked about drugs taken during pregnancy. ☐
- c) Asked about place and mode of delivery. ☐
- d) Breast examination. ☐
- e) Pelvic examination (uterine involution, state of the lochia, healing of perineum, etc.). ☐
- f) BP ☐
- g) Pulse ☐
- h) Temperature ☐
- i) Screen TB ☐
- j) Test for Haemoglobin ☐
- k) Test CD4 count ☐
- l) Food supplements ☐
- m) Infant Nevirapine prophylaxis ☐
- n) Adherence counselling ☐

22. What information were you given during this PNC visit? ☐

- a) Counsel on new-born care ☐
- b) Danger signs
  - i. Hypothermia ☐
  - ii. High respiratory rate ☐
  - iii. Fever ☐
  - iv. Refusal to feed ☐
  - v. Septic umbilical cord ☐
- c) Hygiene ☐
- d) Exclusively breastfeeding counselling ☐

- e) Counsel on maternal danger signs ☐
- f) Counsel on the importance of child spacing and contraception (including Lactational Amenorrhea Method (LAM)) ☐
- g) Promote condom use for dual protection (prevents pregnancy and protects against STI/HIV infection) ☐
- h) Importance of Early Infant Diagnosis at 6 weeks ☐

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
23. Were you ensured of support from mentor mother or expert client during postpartum period?					

*PNC services at 6 weeks to HIV positive mothers*

24. Did you attend the 6<sup>th</sup> week PNC visit?

- a) Yes ☐
- b) No ☐

25. What postnatal care services were provided to you at 6<sup>th</sup> week visit?

- a) Take history ☐
- b) Physical Examination ☐
- c) BP check ☐
- d) Pulse count ☐
- e) Temperature check ☐
- f) Weight ☐
- g) Height ☐
- h) Family planning method ☐
- i) Condoms ☐
- j) Nutrition assessment ☐
- k) PAP smear ☐
- l) Screen opportunistic infections, especially tuberculosis ☐



m) Cotrimoxazole ☐

n) Adherence ☐

26. Were you screened TB positive?

a) Yes ☐

b) No ☐

27. If yes, was your infant given Isoniazid prophylactic therapy?

a) Yes ☐

b) No ☐

28. What information were you given at the 6<sup>th</sup> week visit?

a) Safe infant feeding ☐

b) Resuming sexual activity ☐

c) Early Infant Diagnosis (EID) ☐

d) Appointment date for EID results ☐

e) Not given any information ☐

f) Other (specify).....

### **Section C**

*Care provided to an HIV exposed infant immediate after delivery*

29. What postnatal care services were provided to your baby immediate after delivery?

a) Physical examination ☐

b) Skin-to-skin contact with you ☐

c) Properly clamped the cord ☐

d) Instil 1% tetracycline eye ointment ☐

e) Injected Vitamin K 0.5mg intramuscular ☐

f) Supported you to initiate breastfeeding within 1 hour ☐

- g) Administered infant nevirapine ☐
- h) Was there an indication for Cotrimoxazole ☐
- i) Other specify.....

30. What information were you given immediate after delivery concerning your baby?

- a) Early infant diagnosis of HIV ☐
- b) Cotrimoxazole prophylaxis ☐
- c) Supported to exclusively breastfeeding ☐
- d) Additional information (specify).....

*Postnatal care rendered to the baby at discharge*

31. What postnatal care services were provided to the baby on discharge?

- a) Physical examination ☐
- b) Pulse count ☐
- c) Temperature check ☐
- d) BCG ☐
- e) Polio immunization ☐

32. What information were you given at discharge?

- a) Identification of danger signs to the baby ☐
- b) Immunization schedule
- c) Cotrimoxazole schedule
- d) Nevirapine schedule
- e) Postnatal care visit at 7-14 days ☐
- f) PNC at 6 weeks ☐
- g) Choice infant feeding ☐

*For ALL infants postnatal visit within 3-14 days:*

33. What postnatal care services were provided to your baby at this visit?

- a) Physical Examination ☐
- b) Asked about drugs offered immediately after birth ☐
- c) Infant feeding practice ☐
- d) Weight ☐
- e) Temperature ☐
- f) Nevirapine prophylaxis ☐
- g) Recommend circumcision for male infants (if not already done) ☐

*Postnatal care services for HIV exposed infants at 6 weeks visits*

34. What postnatal services were provided to your child at the 6<sup>th</sup> week visit?

- a) Physical Examination ☐
- b) Drugs taken at birth ☐
- c) Pattern of infant feeding ☐
- d) Weight ☐
- e) Temperature ☐
- f) Give immunizations per EPI guidelines ☐
- g) Screen for symptoms and exposure to TB ☐
- h) Start CTX ☐
- i) Collect infant blood sample on dried blood spot (DBS) for HIV testing ☐
- j) NVP prophylaxis ☐
- k) Confirmed BCG scar ☐
- l) Polio 0 immunization ☐

35. How long did you wait before being attended in all your visits?

- a) Less than 30 minutes ☐
- b) 30minutes- 1hr ☐
- c) More than one hour ☐

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
--	-------------------	----------	---------	-------	----------------

36. Were you satisfied with the service you received from the health care providers?					
37. Did your PNC visit meet your expectation?					
38. Has the information given to you of benefit?					
39. Will you encourage other HIV positive mothers to attend PNC visits?					
40. After all the services that you received. Do you understand the risk of MTCT of HIV?					
41. If you can give birth to a child would you attend PNC visits?					

42. What is your view about the PNC visits?

- a) Beneficial to mother ☐
- b) Beneficial to the baby ☐
- c) Waste of time ☐
- d) Other specify.....

43. What inspired you to attend PNC visits?

Explain.....  
.....  
.....  
.....

44. What might be barriers for mothers to attend PNC visits?

Explain.....  
.....

.....  
.....  
45. Were PNC services offered in one room?

Yes ☐

No ☐

46. How has been your communication with your health care providers?

a) Excellent ☐

b) Good ☐

c) Better ☐

d) Bad ☐

e) Extremely bad ☐

**Section D.**(for senior midwife per study site)

***Structure***

47. Do you have midwives in PNC unit?

a) Yes ☐

b) No ☐

48. Do you have a supervisor?

a) Yes ☐

b) No ☐

49. Are all the midwives working in the PNC unit trained on the MoH (2010) guidelines?

a) Yes ☐

b) No ☐

c) Not all of them ☐

50. Do you submit monthly PNC reports to the MoH (M&E unit)?

a) Yes ☐

b) No ☐

51. Do you have any quality assurance mechanism in place?

a) Yes ☐

b) No ☐

52. Is the repair and maintenance unit working well?

a) Yes ☐

b) No ☐

c) Other specify.....

53. How are your PNC services linked with the community?

a) Through Rural health motivators ☐

b) Through Expert clients ☐

c) Other specify.....

54. Where do you order your PNC supplies

a) CMS

b) Regional health office

c) Development partners

d) Other specify.....

### **Outcome**

55. Do you have strategies to capture MMR during PNC in your facility?

a) Yes

b) No

56. If yes, what is the facility rate.....

57. If no, how do measure it?.....

58. Do you have strategies to measure infant mortality rate?

a) Yes

b) No

59. How do you measure your client satisfaction?

.....

.....

**Section E**(checklist for structural elements as per the framework)

**A. Human resources**

Item	Please tick if available/seen	Comments
Midwives		

**B. Material resources**

Item	Please tick if available/seen	Comments
NVP syrup		
NVP clips		
NVP Syringe		
Cotrimoxazole tablets		
Isoniazid tablets		
Cotrimoxazole syrup		
Isoniazid syrup		
Zidovudine tablets		
Lamivudine tablets		
BCG vaccine		
Polio drops		

DPT vaccine		
Vitamin A		
Thermometers		
Sphygmomanometer		
Examination bed		
Safe water		
Electricity		
Laundry		
Steriliser		
Functioning telephone		
Ambulance		
Car to evacuate referrals		
HIV determine		
HIV unigold		
PCR-DNA TESTS		

### C. Organizational resources

Item	Please tick if available/seen	Comments
ANC cards		
Child welfare cards		
Postnatal register		
MoH (2010) guidelines		
Central Medical Stores ordering forms		
Minutes for quality assurance meetings		
Trainings attendance list		



**CHECKLIST FOR POSTNATAL CARE SERVICES DOCUMENTED ON CARDS**  
(Antenatal & child welfare card) at the healthcare facility).

**1. Labour and delivery care**

<b>MOTHER</b>	<b>Assessment</b>	<b>Tick if seen</b>
	Date of delivery	
	Place of delivery	
	Mode of delivery	
	HIV status	
	Delivered by Dr, Midwife, TBA	
	Birth Weight	
	Pregnancy outcome	
<b>BABY</b>		
	APGAR score	
	Birth weight	
	Sex	
	I-NVP initiation	
	Other drugs given	
	Date of BCG given	
	Date of polio given	
	Skin to skin	
	Early MC discussion	
	Date for visit within 7- 14 days	

***Thank you so much! Ngiyabongakakhulu!***